

Vol. 2 No. 4
August 1993

\$4.95



ATARI CLASSICS

The Magazine for the Dedicated 8-Bit User

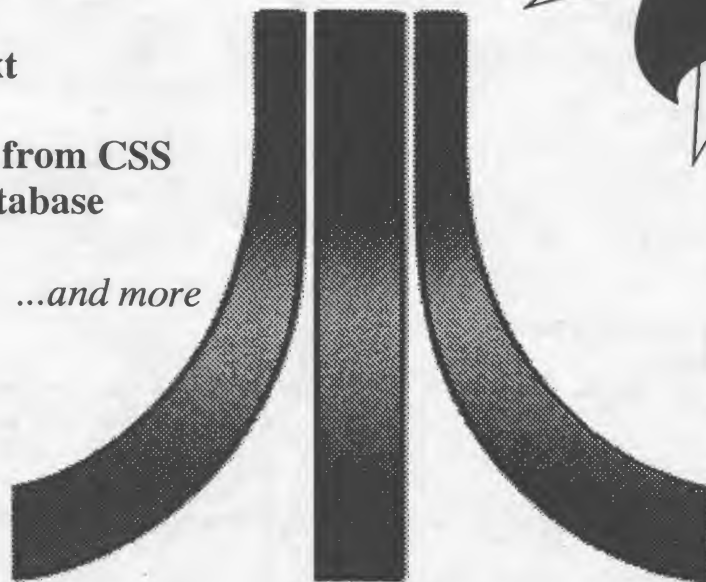
In This Issue:

**FURY: The Wrath of Taljun
Cathu
AC Guide to Expanded RAM
AtariWriter-80 Auxiliary
Menu
Digi-Studio Sound & Music
System
Do-It-Yourself Text
Adventures
The Floppy Board from CSS
Saga of the AC Database**

...and more



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Table of Contents

FEATURES

- Digi-Studio: Digitized Sounds and Music System** 4
Staff Reviewer Bob Hardy gives this British import from Dean Garraghty Software a thorough workout.
- AtariWriter-80 Auxiliary Menu** 22
Jeff McWilliams assumes a dual identity as Contributing Author to bring us a useful addition to Atari Corp.'s only 8-Bit 80-Column Wordprocessor.
- FURY: The Wrath of Taljun Cathu** 24
Game enthusiasts will revel in this recently introduced action-adventure from Aerion Software, reviewed by Graphics & Entertainment Editor Jeff Potter.
- Saga of the AC Database, Part 2** 27
Circulation Editor Ben Poehland concludes his dramatic tale of the world's most battle-hardened 8-bit database.
- Atari Classic Desktop Publishing** 13
Contributing Author Stephen Wallace presents the most incredible compendium we've seen on the subject of 8-Bit DTP. A landmark reference for all newsletter publishers!
- The Hewlett-Packard Deskjet 500: A New Wave In 8-Bit Publishing?** 19
The outer limits of 8-bit DTP and wordprocessing are explored in this fascinating tutorial/demo by Contributing Author Frank Kweder.

COLUMNS

- Exploring the Wild FONTier** 17
AC's own resident DTP enthusiast Dave Richardson contributes to this issue's focus on desktop publishing by giving useful tips on indentations and tabs in Daisy Dot III.
- The Garret** 7
Columnist Ed Hall reviews some of the resources available for for the do-it-yourself text adventurer and gives us a nostalgic glimpse at one of the best authors of the genre.
- Moonlight Workshop** 25
In Part 3 of the AC Guide to Expanded Memory Columnist Jeff McWilliams resumes his usual identity to discuss firmware RAMdisk handlers built into the Newell and CSS replacement OS chips and gives practical examples on using them effectively.
- The Fitting Room** 9
Staff Columnist Mike Jewison takes the CSS Floppy Board into the Fitting Room for a tryout and finds a near-perfect fit. The tailor won't be needed this time, thank you!

DEPARTMENTS

- Swap 'n' Shop 30
Errata (We Goofed!) 23
Dream Street 16
New Faces At AC 29

ATARI CLASSICS

Vol. 2 No. 4 August 1993

Published Bimonthly by

Unicorn Publications

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MANUSCRIPTS: Please send manuscripts directly to the appropriate Editor. For a free AC Author's Guide send a written request to the Managing Editor. AC will pay \$25 for major Feature Articles upon Publication.

SUBSCRIPTIONS: See the Subscription Form elsewhere in this issue. **BACK ISSUES:** \$3.00 mag or disk, \$4.00 outside USA, payable to Ben Poehland in US Funds.

ADVERTISING: Write to the Advertising Editor for a schedule of commercial ad rates & discounts. Opinions expressed by authors are their own & do not necessarily represent the views of Unicorn Publications or the Staff of AC. Atari, the Fuji symbol, & names of Atari products are trademarks of Atari Corp. Other trademarks are property of the respective manufacturer.

Atari Classics is published bi-monthly (Dec, Feb, Apr, June, August, Oct) for \$25 per year by Unicorn Publications, 3487 Braeburn Circle, Ann Arbor, MI 48108-2619. Second-class postage pending at Ann Arbor, MI. **POSTMASTER:** send address changes to Atari Classics, 179 Sproul Rd/Rt. 352, Frazer, PA 19355.

Digi-Studio: Digitized Sounds and Music System Programs by Dean Garraghty Software

Review by Bob Hardy, AC Staff Reviewer

Studio By Mail

Digi-Studio arrives simply: two diskettes containing version 1.2 of the software and a 44-page laser-printed manual bound with a plastic sleeve. Nothing fancy, just a large envelope with a cardboard insert, passed to me from Dean Garraghty Software in England via AC's Managing Editor. My curiosity sharpens as I fire up my Newell 256K 800XL (the extra memory doesn't seem to help) and my ancient Rana 1000 disk drive. The main programs are on a single-density AtariDOS 2.5 "floppy" disk, with the back side and another whole disk devoted to additional sounds and "tunes". I lock the latch on the venerable Rana and watch my screen...

Up comes the Turbo-BASIC XL 1.5 banner. That clears my mind about the language in which the programs were written, but it'll disappoint SpartaDOS users. Attempting to load Turbo-BASIC locks up SpartaDOS (they both try to grab the same memory area), so there's a compatibility roadblock for Sparta fans. Also, since Turbo-BASIC XL won't run on 400 or 800 machines, neither will Digi-Studio (henceforth called D-S): you need 64K of memory. The manual cover says "XL/XE", and that's exactly what it means.

D-S runs normally under OS/A+ 2.00, as I'm sure it would under AtariDOS 2.0s. I tried it under TOP-DOS 1.5+ but some of the screen formatting came out wrong. Under MyDOS 4.2C the directory listing routines get confused by the extra digit in the file length field, gives ERROR 136, and exits back to the menu. I'd expect the latest MyDOS 4.5 version to work properly with D-S. Probably any DOS variants that closely emulate AtariDOS 2.0 would work, such as MachDOS, SuperDOS and SmartDOS.

What's It Like?

The manual explains the LIDS (Language for Instructing Digitized Sound) music language, devised for writing "tune" files. LIDS is roughly equivalent to the language used by the Atari Music Composer cartridge. There's no cute display while listening like you get with Music Composer, the Advanced Music System programs, or Music Construction Set. This was disappointing, considering Music Composer was released in 1980, and Music Construction Set in 1983. Of course, in 1980 Music Composer cost a lot more, and Music Construction Set cost more in 1983 than the new, lower price of D-S.

There's a central feature of D-S that's different from Music Composer, Advanced Music System and Music Construction Set: you play the music using "samples" instead of synthetic tones. Samples are digitally encoded data taken from real-world analog sounds. One sampled sound is used to generate all the notes necessary to play a song. So you can play the "Star Spangled Banner" with panpipes, sheep bleats, or gunshots!

Manual Labor

The manual is well-written and looks nice, but the last few pages (appendices A through D) contain hand-drawn musical symbols and reproductions of printouts from a plain old 9-pin dot matrix printer. Nevertheless, the manual is better thought-out and more polished than most. I was favorably impressed.

In the "Credits and Copyright" section of the manual, the author states that D-S isn't intended for professional musicians and may not be suitable for public performance. There's no MIDI-interfacing, sequencing or other features for the professional musician. D-S aims to be a fun program for musical amateurs and kids. Children will enjoy the Keyboard Player but will need assistance from an adult. I estimate the minimum age for using D-S without adult supervision to be about 10 to 12 years.

Perhaps the best part of the manual is a tutorial on reading music. This has been done so well that non-musical users should readily learn to convert sheet music into their own tune files.

Careful study of this section of the manual will teach new users the basic elements of music notation. Bravo, Mr. Garraghty! I like software that actually enriches the user's life in some way, beyond just using the program.

Tune-Player-2

This part of D-S will be used by everyone who buys it. It plays tunes provided on the disks as well as those users may create for themselves with the included Text Editor and Tune Compiler. Playing back existing tunes with existing samples requires no musical skills: anybody can do it. But, the user interface will try your patience.

I try to "Load New Sample" and find it irritatingly slow. Or rather, the pause before the prompt appears, asking which sample to load. It seems the memory buffer containing each sample has to be erased before a new sample can load. This takes about 9 seconds- long enough for ice cream to melt! It isn't clear why the new sample can't simply overwrite the old one in memory. D-S doesn't automatically clear memory upon bootup, but only when I load a sample- just when I don't feel like waiting for it. It also doesn't know what samples it has in memory at any given time. This creates an inadvertent feature: I manage to play "music" when I haven't loaded *any* samples! Random data junk that happens to be in memory appears as the "sample" because the data buffers are only cleared when you actually load a sample. The sound thus produced is not inspiring.

I select "Load New" by mistake. Oops! I trust the software, and think "the system must know enough to accept a carriage return as a clue that I goofed, and I don't want to 'load new' after all". It doesn't. I can't exit without getting an error message. I hit Return and get "Sorry. Error occurred on...". There should be a more elegant way to escape from this option. Otherwise, the Tune Player easy to use.

There's also a program module allowing you to play simple tunes on the keyboard using previously loaded samples as the sound. My 10-year-old daughter thought this great fun, but I was unimpressed. The keyboard layout isn't much like a piano. But this module is your only way of previewing the various samples without having to play an entire tune.

I preview some of the samples using the Keyboard Player. Darn, that "Clear the bank before loading the sample" routine is SLOW! Some of the samples aren't very musical, such as WOOF, COW, SCREAM2, and PIGS. Other sounds are semi-musical, being two-note chords. These are musical alone but aren't suitable for playing entire melodies. SYNTH3 for instance is a complex chord: a minor 9th. Playing a tune with a series of minor 9th chords isn't musical. Fortunately, there are some definitely musical sounds among the samples provided. Here are my picks for the best musical samples: BOATHORN, ELECG1, ELECG3, ELECG4, ELECG5, GUITAR2, HEAVYG, PANPIPES, PING, SYNTH4, SYNTH8, and TRUMPET.

I've Lost The Tune

You can enter new songs with the Text Editor and compile them with the Tune Compiler afterwards. These can be stored on disk and played back like any of the provided tunes. In order to successfully create a new tune file, I must learn the LIDS music language from the manual.

I fire up the Text Editor. It's a little awkward but works reasonably well. I enter new music data and press RETURN on an empty line to exit back to the Text Editor menu. Back at the menu, I can delete or edit text only by line number, so I must know what line number I want. Otherwise, I must list out the file to get the number, exit back to the menu, and try again. The editor doesn't check syntax: I could use it for writing ordinary text, though I wouldn't want to (it doesn't compare with any of my

Atari wordprocessors). The most endearing feature of the editor is that it doesn't require me to exit the program in order to use it.

I discover I can't format a data disk from the Text Editor menu. I have no data disk prepared, not having expected this, and I nearly lose my tune because I have nowhere to save it. Fortunately I'm able to find some free space on another disk I hadn't intended to use for music. Hard to believe such a necessary function could have been omitted, but it was.

LIDS seems non-intuitive to me. According to the chart in Appendix B of the manual, available notes are F1 (lowest) to C4 (highest). Ten pages earlier, page 27 of the manual lists the time values allowed by LIDS. I wonder why the acceptable time and note values aren't on the same page, with my fingers stuffed between the pages to keep my place while skipping back and forth. Time values are given using mnemonics based on British nomenclature: a quarter note is a crotchet (C), a half note is a minim (M), a whole note is a semibreve (S) and an eighth note is a quaver (Q). This nomenclature isn't incorrect, but it would've been easier for me, an American user, if Q, H, W and E had been used instead of C, M, S and Q, as the Music Composer cartridge did. Dotted notes are indicated by a D before the regular time value token— even though in sheet music the dot follows the note.

Sharps and flats can only be entered one way: C# is available but D-flat isn't, even though they're the same note. I discover that if I enter a D-flat the Text Editor will accept it but the Tune Compiler won't. This is frustrating, as my tune is in the key of B-flat (where D-flat is a perfectly legitimate note), yet I'm forced to enter the note as C#. But the Tune Compiler is Digi-Studio's highest authority on the subject of musical correctness: you can't appeal to this judge when an unfavorable ruling is passed down. It should be smart enough to know that C# and D-flat are the same note, and if C# is correct, D-flat can't be incorrect. Hrrumph!

So a dotted quarter note of D-flat in the second octave is, in the LIDS music language (and according to the dictates of the Tune Compiler):

C2# DC

(note C -- octave 2 -- sharp -- dotted -- crotchet)

while in Music Composer, it was:

DF2Q.

(note D -- flat -- octave 2 -- quarter note -- dotted).

The language used in Music Composer was more intuitive and natural to me than LIDS. I can't make a comparison with Music Construction Set, as it allowed you to just select the desired note and place it anywhere on the staff along with necessary sharps, flats or dots. Although LIDS supports time signatures, it doesn't support key signatures, such that even in the key of B-flat every B-flat note must be entered as B-flat and not B; and every D-flat... well, you see! Music Composer and Music Construction Set both supported key signatures. Very frustrating for people who read music and expect the support of key signatures! And such folk are most likely to enter new tunes themselves.

The Tune Compiler is just what it says it is. It reads a tune from a text file on disk or from memory and compiles it into a tokenized music file. I'm reminded of the C language when I use it. The Tune Compiler, like a good C compiler, warns of syntax errors and gives me clues as to the nature of the problem and the line on which it occurs: a nice touch. I enter a tune of my own to test the Text Editor and Tune Compiler. The Tune Compiler correctly flags several errors (as well as all my D-flats!). After I've fixed them, it compiles the LIDS file into a loadable tune file. However...

Rhythm Blues

After compiling and saving my tune on disk, upon playback with several different samples I find the rhythm "mushy". The length of each note seems only approximately what I entered, and I'm unable to make any effective correction. This is forgivable with some ballads but much less satisfactory in a march or other briskly rhythmic song. I use my favorite test piece, the Promenade theme from "Pictures at an Exhibition", which is approximately a march. I find the rhythm unacceptable compared to

results from Music Composer or Music Construction Set. Perhaps a more percussive sample would sound better, but the Promenade theme is lyrically melodic so I use less percussive samples to play back my tune. It's not a happy combination. The manual says "The timings are not always perfect". I'm unlikely to try entering more tunes after seeing what happened to my beloved Promenade! This smeared rhythm would be unpleasant for "Old MacDonald Had A Farm" and doesn't improve Mussorgsky, either.

It would be much easier to correct mistakes interactively. Both Music Construction Set and Music Composer allow you to listen back to what you entered immediately, but that's impossible with D-S due to the non-interactive method of entering data. This less flexible approach does work but may be discouraging to musical novices and hobbyists who are poorly equipped to deal with the task of correctly entering the musical data blindly (or deafly, to be exact). A simple "beep" of the right pitch for each note as it's entered would make the Editor more usable; notes that were glaringly wrong could be corrected "on the fly" rather than to exit, compile, and load the entire tune to find the clunkers. Instead, I must know the notes I want in advance to create a "good" LIDS file in a reasonably short time.

If It Ain't Broke...

The manual describes an "offset" required for users outside the UK, to adjust differences in the pitch of scales and prevent an "out-of-tune" effect discussed in the manual. I didn't need it. Using the default value of 0, I think the scales sound better than they do with the recommended -5 for the U.S. Maybe the author had no opportunity to try this option in the U.S., but if he could hear it as I do, he'd agree the offset is unnecessary.

Then there's a pitch problem when I try to use higher notes. The low octave seems well in-tune, but not some of the highest notes. This may bother my ears more than yours, and there are some precedents. Atari 8-bit machines have always had a problem with musical pitch. It affected the original Advanced Music System and Music Composer programs as well as Atari BASIC music programs, unless they used the 16-bit technique more familiar to advanced programmers. This problem could potentially warp the ear-training of young aspiring musicians who don't know sharp from flat and need to learn to hear the difference. The manual says "...some pitch values sound odd." Yep. They need fixing.

The Sample Editor

The Sample Editor is the part of the program that will be used least. Editing a sample means changing the content of the digitized sound data: you alter the shape of the sound waves by moving points of data around. Minor edits aren't audible. This isn't a flaw in the program, it's just a fact of life! Major editing isn't a task the casual user will undertake, so the Sample Editor's awkwardness won't be noticed by most people. They'll simply avoid it. Manual sample editing is for someone with lots of time to kill and gallons of hot coffee.

Upon entering the Sample Editor, I see it doesn't offer me a way of viewing what samples are available on the disk when the obvious thing I'll want to do is load a sample. The manual warns of this, but there should be a Sample Editor menu option to allow viewing samples on disk. It's unreasonable to expect users to memorize the names and locations of all the samples and tunes on all four disk sides. Now I'm stuck, wondering what to do.

You Can't Get There From Here.

I must exit back to the main menu and enter the Keyboard Player to list out the available sample files. Side A of the program disk contains very few samples, so I try side B. Upon attempting to exit back to the Main Menu to return to the Sample Editor, I encounter an error with no explanation, and the Keyboard Player menu is reprinted.

Gradually I realize the problem is that I'm now on side B, and

the Main Menu program is back on side A, but there's no error message saying "Couldn't Find Main Menu Program! Please Insert Program Disk With Side A Up." By now I've forgotten the name of the sample I went after in the first place. Instead of a user interface, the Sample Editor has a hedge of thorns.

This occurs throughout D-S and needs to be fixed. I can't save a tune, a LIDS music file, or a modified sample on the provided disks, but all the programs are on those disks. I can't avoid having them in the drive nearly all the time, but I must remove them to save any files and then prompt *myself* whenever I forget to swap back. It seems only one disk drive is supported. Bleah! A RAMdisk would be the best place to store data files, but allowing a second floppy drive would be better than just one. I finally manage to load a sample and continue.

Unfulfilling Frills

The Sample Editor lacks some other important options. I read that samples are edited by "pages", a chunk of memory containing sample data. I can graph the sample on the screen- a potentially interesting and informative option- but I can't tell how the graph relates to the page I wish to edit. There are no labels to identify the graphed pages, such that I could then edit them by number. This reduces the usefulness of the graph to little more than whimsical curiosity. You have to specify the page you want before you can edit it, but there's no way to identify any page without editing it. A "zoom" option would have been nice, or just a scale of page numbers at the bottom so you can find your place. The Sample Editor emerges clearly as the least usable part of the software.

This points up the greatest overall weakness I found in Digi-Studio: error handling- and the user interface generally- is poor. D-S needs further refinement before it will be a really finished product. Most of the technical glitches would be forgivable if the user interface were more friendly. Nowhere is there a default filename, even after I've loaded in a file, whether it be tune or sample. You'd think the Sample Editor and Text Editor especially would offer to save the current sample back to its original filename, without requiring me to memorize it, but they don't.

Overview and Suggested Improvements

On the upside, there are lots of samples and quite a few tunes. On the downside, many of the samples have no value beyond the element of surprise, and I can't tell what they are without hearing them. Thank goodness the Keyboard Player lets me try out the samples, though I still have to endure the deathly slow loading of each new sample file.

Maybe I'm just a fussy old guitar player, but I find some of the tunes are rather poor transcriptions. I'd enjoy this package more if it had better song files, with fewer "novelty" sounds and more truly musical samples. I remain unconvinced by the piano, trumpet, and several guitar samples. There aren't any violins, cellos, xylophones, vibes, harps, celestes, flutes, harpsichords, saxes, or harmonicas. But there's a donkey, pig, owl, two samples of laughter, sheep, dog, boathorn, and a motor-driven camera. There's more of sideshow than symphony in the selection of sounds.

Tunes can't be longer than 500 notes, including rests, which is understandable but regrettable. Too bad also that only single-voice sound is possible. But to allow two voices would cut the length of each tune by half, to accommodate the data storage of notes for the second voice. Still, it would be nice to be able to use more than one sample in a single tune.

I can see a lot of work went into D-S, but overall design of the product is shaky. The several modules comprising Digi-Studio don't interconnect like they should, and error handling is flatly substandard. These deficiencies seriously compromise the pleasure of using it. It's easy to get D-S to make silly or rude noises. But getting *music* out of it is not so easy, which greatly irks the musician in me. My best effort yields a tune that's at most a blurry cartoon of the music. Maybe I'm too jaded, or my attitude prevents me from just having fun with the goofy sounds as someone else might. I'm not laughing. I'm not even smiling.

Part of the problem might be that the programs are all written in Turbo-BASIC. This is a big improvement over Atari BASIC but still means limited memory space for the program and for my data. Assembly language lets you cram lots of code and data into a small memory space. If D-S had been written in assembly rather than Turbo-BASIC, I think many more features and a better user interface might have been possible. It would have required considerably more work, though.

At \$15, I think Digi-Studio is reasonably priced. I paid more for Music Composer when it was new, and less for Music Construction Set when it was old, and used both of those quite a lot. But a decade has gone by, and with inflation and the decline of the Atari 8-bit software market, the price is modest. Due to the poor user interface and lack of conveniences discussed earlier, D-S is less fun than those earlier music programs. (Well, okay, Music Composer's user interface wasn't dazzling either.) Since the price of Digi-Studio recently dropped by half (!), users may be willing to put up with these flaws in exchange for the ability to play back samples instead of synthetic beeps or the lame organ tone Music Composer produced (unless you had Ken Collier's Music Synthesizer playback program from ANALOG Computing #15 which helped out Music Composer files a lot!).

Near the end of the manual, the author says many future developments are expected, though that was written when the price was twice as high. I don't know how many of those promises will now be kept, but I've here presented my wish-list if future improvements are still a viable possibility. With The revisions I've noted in this article, I'd find tomorrow's Digi-Studio a lot more fun than today's version. Maybe by telling Mr. Garraghty that we care, and describe features we think are really important, he'll listen, and the product will evolve into something we'd all like to add to our software libraries.

But for now, I shut down the 800XL and remove Digi-Studio for the last time from the jaws of my trusty Rana drive. There's little danger I'll wear out the disks from excessive use.



DEAN GARRAGHTY - ATARI 8-BIT SUPPORT

Digi-Studio Price Decrease!

In order to show our continuing commitment to producing Atari 8-bit software, we have been able to reduce the price of Digi-Studio (the digitized sounds and music utility) down from \$31.45 to just \$15, which includes shipping.

This new low price doesn't mean you get less software! Everything included with the package at the old price is included for the new price! It's exactly the same package, but at less than half price!

Digi-Studio is a music creation system, but for digitized sounds! You can play these sounds using your keyboard like a piano keyboard, or create a programmed tune using the special LIDS language. You can also edit digitized sounds using the sound editor, and you can even merge digitized tunes into your own Basic programs!

Digi-Studio is supplied with a 44 page manual, and 2 DS/SD disks. It will only run on XL/XE machines, and not the old 800. As well as the programs mentioned above, you also get 55 sound samples, and 47 ready-to-play tunes supplied. Get your copy today in the US from:

Lance Tatman, 844 Kern Street, RICHMOND, CA 94805

In the UK the price is £7, including P&P. Price to EEC countries: £10, including Air Mail. Foreign orders pay in UK pounds in cash, or send an IM0. Orders to:

Dean Garraghty, 62 Thomson Ave, Balby, Doncaster. DN4 0NU, ENGLAND.

Other Atari Products

We also produce the Atari 8-bit News-Disk, an on-disk newsletter for the Atari. We have produced 12 issues of this so far. These can be bought direct from us in the UK as a back issues pack for \$22 (UK price: £6.50, EEC price: £8). We accept payment in US\$ in cash.

We also have an extensive PD library, with 166 disks currently available. These can cost as little as \$2.50 a disk! Send \$5 for the on-disk catalogue, or get a free catalogue when you buy the News-Disk back issues pack! All US payments should be made in cash in US\$. If sending large amounts of cash, you may want to take out insurance on the letter with the Post Office.

We also sell most PPP products in the UK, including: QUICK, SAM, QUICK Ed, Rubber Ball, Gaggas It!, and Minesweeper. These are also available in the US from Lance Tatman.



The Garret

Write Your Own Text Adventure

Ed Hall, AC Staff Columnist

For a long time I was really annoyed at Infocom. They had ZIL and I didn't. ZIL (for Zork Implementation Language) was used exclusively for creating text adventures. Music and pin-ball construction software already existed and were big sellers, so why wasn't there a ZIL for people like me?

AdventureWriter

Then one day I read a review of AdventureWriter, a software title that enabled non-programmers to write their own adventure. The review slammed the program for being awkward, laborious, and inefficient. I didn't care. I immediately called up the company and ordered it (and paid a handsome price in my haste).

The program, I'm pleased to say, is very good. Sure, it's complicated and takes a lot of work, but certainly not any more than the actual programming itself. The manual is over 100 pages long and, despite one or two murky areas, is competently done. Best of all, it creates stand-alone programs; there is no further need for AdventureWriter after the game has been produced.

Over the years, I discovered other programs for creating text adventures, but for me AdventureWriter remained the best. It allows the use of over 250 words, 250 objects and 250 locations, though usually the program runs out of memory before these limits are reached. The numbers compare quite favorably with commercially produced games.

For example, most Scott Adams adventures can be played to completion using less than 200 words (and some less than 100), and most games have less than 30 locations. Level 9 games commonly employ about 200 locations and 50 items, but can accommodate much more text than AdventureWriter can, thanks to text compression. The vocabularies of Infocom games range between 700 and 1000 words, while Synapse/Broderbund's "electronic novels" reached 1200 words.

But don't let numbers fool you. Huge vocabularies are meaningless if a game is poorly designed, or offset by other deficiencies. For example, the Synapse/Broderbund text adventures were bogged down by the lengthy disk access needed to handle the large vocabulary; conversely, one of the best features of Level 9 (and AdventureWriter) games is that once they are loaded into memory, there's no further need for disk I/O.

I know of at least one instance where AdventureWriter has been used to produce a commercial product. A fellow named Frank Eva sold by mail a series called MicroNovels, which included Star Voyages and the Casebook of Hemlock Soames. And recently an AdventureWriter game turned up as disk bonus from the British magazine *New Atari User*.

Games written with AdventureWriter are supposed to contain a notice identifying them as such, but you can also recognize them by their structure. Each game consists of two files: a short loader and the main program, both in object code.

AdventureWriter was originally released by a firm called CodeWriter; however, I've also seen it listed under the Atari name, so possibly it was later picked up by Jack and The Boys.

The Slave

Another commercial product was The Slave, a British pro-

gram offered for sale in 1986. It was reviewed in issue 24 of *Page 6* magazine by the capable Garry Francis. After a detailed 3-page examination of The Slave's shortcomings, Francis concluded that it was the worst piece of software he had ever come across, and recommended using the disk as a coaster. His review was the most thorough dismembering of a software title that I've ever encountered.

Interestingly enough, the program's author, Nick Gregory, was responsible for translating to the Atari a text adventure called Rick Hanson, which was distributed by Robico. Garry Francis called it a thoroughly enjoyable game.

The Wizard

AdventureWriter may be difficult to find these days. If you can't locate it, try The Wizard, a suite of programs designed by Clayton Walnum and appearing in *ANALOG* 58 and 59. It consists of three modules: an editor, a compiler, and a database printer. Together they'll help you write a complete, stand-alone BASIC adventure. The listing is automatically encrypted, which prevents anyone from peeking at the code to find the solution.

Games produced using The Wizard will be fairly simple; they can't exceed a maximum of 30 locations and 50 objects. However, the Wizard is a good place for novice adventure-game writers to start out. Just make sure you have the accompanying articles handy, as you'll never figure out how to use The Wizard without the proper directions.

Adventure

This unique text adventure has a built-in construction feature. The program uses a separate file (maximum 58) for each location. By keying in special commands, you can access the editor and create your own location files.

The editor can handle conditional actions, random events, and even has five built-in sound effects. You can also use any standard 9-sector font. However, only five objects can be manipulated.

Adventure is a PD program written in BASIC by Max Manowski and initially distributed by Eugene's Atari Computer Enthusiasts. I got my copy from Bellcom, a PD outfit whose ads you may have seen in *ANTIC*, *ANALOG*, and *AC* (Feb. '93). Ask for disk no. 31. It comes with complete instructions.

Illustrated Adventures

Adventure Master (CBS Software) is a sort of scaled-down version of AdventureWriter, with one major exception: it allows the use of graphics. Because it's simpler than AdventureWriter, it's also easier to use. However, it may be a bit too simple; it's limited to 32 objects, 50 locations, and 10 pictures. Maximum vocabulary is 100 words.

A better choice (if you have some knowledge of programming) is a 3-disk set from Ed Churnside called The Dragon's TAIL. It's a collection of text and graphic routines which Churnside used when he wrote an illustrated text adventure called Dragon Quest (also from the *ANTIC Catalog*). Volume 1 covers text, Volume 2 handles graphics, and Volume 3 provides a lengthy tutorial. The package includes extensive docu-

mentation as well as the source code for Dragon Quest. Dragon's TAIL is a valuable resource for anyone interested in constructing adventures.

For those who just want to tell a simple story, try Storybook from issue 29 of *Page 6*. This BASIC program provides a number of graphics tools which enable you to create a simple picture in Antic mode 4, then add up to 5 lines of text. What you get is not an adventure, but an illustrated story which can have as many consecutive panels as the disk directory has room for.

Miscellaneous Help

Adventures with the Atari - This out-of-print and hard-to-find book by Jack Weston provides lots of help for creating your own adventure, including a BASIC program shell. As a bonus there are complete listings for a text adventure in Atari BASIC, Microsoft BASIC, and Atari LOGO.

Adventurous Programming - This 3-part series by Clayton Walnum appeared in issues 39-41 of *ANALOG*, and gives a step-by-step guide for creating a text adventure. A parser and a text encryptor are given as separate routines.

Writing Adventures - An excellent 4-part series by John White appeared in the British magazine *New Atari User* (issues 48-51). It discusses program design and advanced techniques such as data compression. There is a sample adventure, Metman, which works in Atari BASIC, TurboBASIC, and compiled TurboBASIC. (Note: these back-issues are still available.)

Adventure Works - David Woolley's brief tutorial on writing a text adventure appeared in the April 1989 issue of *ANTIC*. It includes a very simple adventure, Barnaby's Island.

Word Storage Space Saver - Scott Sheck demonstrates a method for storing text that may be useful in a BASIC text adventure. The article appeared in the December 1984 issue of *ANTIC*.

Boot Camp - In issues 66 and 69 of *ANALOG* Karl Wiegers creates a simple parser and shows how it works.

Infocab - This program by Chris Patterson won't help you create text adventures, but it does provide an interesting peek inside an Infocom disk. It finds the game's working vocabulary and displays or prints it out. You'll find it in issue 60 of *New Atari User*.

Hyperfiction

One of the most interesting products in the last few years has been HyperCard, a Macintosh program which at one time was given away free. It's basically a database which can be used for just about anything, from recipes to adventures. Individual screens ("cards") can incorporate text, sound, and graphics, and be linked to other cards in any way desired. Rob Swigart, who wrote Portal (mentioned last issue) said he could have programmed the game himself in a month using HyperCard, instead of the two years it took professionals to do in machine language.

Products like HyperCard herald a new kind of fiction available only on the computer. Multiple plotlines can be handled much more elegantly than in traditional, paper-based fiction. Hyperfiction is a name sometimes applied to it.

Of course, we don't have anything as sophisticated as HyperCard for our 8-bits, but there is a program kicking around that strikes me as being... well, not similar, but perhaps as a workable substitute. It's Codesmith's Newsletter Reader, a program for producing disk-based newsletters. It loads text and graphics files, and can use any standard 9-sector font. The main program responds to special commands embedded in the text, which can initiate the loading of another file. In a text adventure, this could become a branching point in a story

(as in Level 9's "The Secret Diary of Adrian Mole"); in hyperfiction it could be a gateway to a new area of information (as in Portal).

But most of all, remember that even a sophisticated program like HyperCard is only a tool. The real work begins before the computer is even switched on: characters, setting, and storyline must be devised before you can begin, and you'll also need to draw up a complete map of your world.

When you start writing, you'll be tempted to do rich atmospheric descriptions, but remember that players will want to examine every object you describe, and will expect suitable responses. Sometimes the responses will introduce new objects, which invite further examination. If you're not careful, things can quickly get out of hand.

Finally, please remember that words are your stock in trade, so get them right. There's nothing worse than a text adventure with bad spelling, bad punctuation, or bad grammar. If you're weak in these areas, enlist the help of someone who isn't.

Brian Moriarty

In talking about text adventures for the Atari, it would be remiss not to say a word about Infocom's Brian Moriarty. After bringing out Wishbringer and Trinity to favorable reviews, he was entrusted with the equivalent of Infocom's crown jewels: writing a sequel to the Zork trilogy.

The result was *Beyond Zork*. A reviewer in *QuestBusters* liked it so much he gave it an 11 (on a scale of 1 to 10). Ironically, of the three games Brian produced for Infocom, only Wishbringer was ever released for Atari 8-bits. What makes it ironic is that Brian Moriarty served as technical editor for *ANALOG* magazine before going to Infocom.

If you'd like to sample Brian's work, but can't find Wishbringer, no problem. He wrote two text adventures for *ANALOG* that are still easy enough to find: *Adventure in the Fifth Dimension* (issue no. 11) and *Crash Dive* (issue no. 17).

The Moriarty Legacy

Though Brian left *ANALOG* in 1984 (immediately after the publication of *Crash Dive*), his influence lingered there for years. Tom Hudson's *Adventure at Vandenburg AFB*, and Chris Smith's *The Treasures of Barboz*, both used the framework devised by Brian for *Adventure in the Fifth Dimension*, and are immediately recognizable as its descendants. In the same fashion, Clayton Walnum used portions of code from *Crash Dive* in his own game, *One for the Road*.

(By the way, *Adventure in the Fifth Dimension* has a funny quirk: it requires a translator. This is odd because *Adventure at Vandenburg AFB* and *The Treasures of Barboz* don't. After tinkering with the program for awhile, I discovered the problem. All you have to do is delete or REM line 12, which is there for purely cosmetic reasons. If you'd like to retain the look of the program, simply delete a single control character from the line. Presto, no more translator. Strange, no?)

When Brian left Infocom, he also left behind text adventures. He joined Lucasfilm Games where he worked on an interesting graphic adventure called *Loom*. Animated sequences and musical score were integral elements, and the interface underwent a major change. And to think it all started with an Atari 8-bit, and a couple of text adventures in a magazine called *ANALOG*.





The Fitting Room

FASTER Floppy, FASTER!



Mike Jewison, AC Staff Columnist

Always In A Hurry

I'll let you in on a little secret: I'm not a particularly patient person. I tend to be the sort of guy who stands in front of the microwave saying "Hurry up. Hurry up!", forgetting, of course, that what now takes a minute in the microwave might have taken five to ten minutes with a conventional oven. That's the problem as technology gets better (and faster); you can't remember what things were like before but at the same time you wonder how you ever did without it.

It's the same story with computers. I have a 25MHz 386-PC clone with a 9ms 80MB hard drive in addition to my family of three 8-bit Atari computers. One of the worst things I can do is use the 386 for a while and then hop over to my 800XL. As I slide in that floppy and power up the computer I find myself saying "Hurry up. Hurry up!" The only difference between this and the microwave story is that the slowness of the Atari floppy drives isn't imagined—it's legendary.

There are some SIO floppy drives for the Atari that offer improved access speed over the older drives. The XF551 has a high speed mode capable of increasing access speeds by a factor of three. ICD, before they dumped the 8-bits, offered the US Doubler upgrade for the 1050. This was basically a set of two plug-in chips that not only gave the 1050 true double density but also UltraSpeed which, like the newer XF551, increased disk access by about a factor of three.

I, however, own neither of these floppy drives. I'm still using my old standby— a Percom RFD44S1— double-sided/double density and slow. To the best of my knowledge there were never any upgrades available to enable the Percom drives to run in UltraSpeed mode. If I want to obtain a faster floppy drive I'd have to look for a Doubled 1050 or an XF551 on the used market somewhere. The 1050, however, isn't double-sided and the problem with the XF551 is that it isn't compatible with the Percom. Each drive has a slightly different interpretation of "double-sided" which means that although any single-sided disk could be read with no problem by either drive, side 2 of any double-sided disk written by the Percom would be unreadable by the XF551 and vice-versa. The thought of having multiple copies of my disks in different formats didn't thrill me, so I decided to go another route.

Floppy Board

Last time you visited, I'd just installed a Black Box on my 800XL. The Black Box (hereafter referred to as the BB) is an interface from Computer Software Services which plugs into the PBI/ECI port on the 800XL/130XE computers and offers oodles of features, including: a SCSI port to enable you to connect any SCSI hard drive to your Atari, a

Centronics parallel (printer) port and an RS-232 serial port. CSS also offers an add-on to the BB called the Floppy Board (FB) which, strangely enough, allows you to connect up to four industry standard floppy drives. Since the drives themselves are connected to the BB, this gives you floppy access at PBI/ECI speeds. As I happened to have a spare one of these "industry-standard" 360K 5.25-inch floppy drives sitting in my junk pile, it seemed the purchase of the FB was the way for me to go.

I placed my order with CSS and received the package in about ten days. The FB has a slightly smaller footprint than the BB and is designed to mount on top of the BB upside-down: the two circuit boards are the slices of bread in a typical BB/FB "sandwich", with chips for "meat". There's also a replacement EPROM for the BB that comes with the FB; you just pry out the EPROM on the BB and replace it with the new one. There are a couple of solder connections to be made between two pins on the replacement EPROM and points on the BB board. Fortunately, the day the FB arrived I didn't have the time to install it. I say fortunately because the next day I received from CSS a small padded envelope with upgrade ROMs for both the BB and the FB. After another day or two I found time to install the new ROMs on the boards, make the necessary solder connections, and plug the FB onto the BB. The installation instructions are very clear, and I had absolutely no problems in getting everything up and running.

Cable Tied

I had heard from other owners of the BB/FB combo, most notably our Managing Editor— The 8-Bit Alchemist Himself— that building the ribbon cables to connect the floppy drives to the BB was difficult because the instructions in that area were unclear. I decided to stay away from that problem by ordering a pre-fabricated cable from CSS. I simply plugged one end of the cable into my 360K drive and the other into the floppy port on the BB.

The cable I received from CSS was simple enough. I made a cursory comparison of the cable with the diagram included in the FB manual and could see no difference. I then asked Ben for a copy of the notes he created while trying to make his own cables. It was after reading Ben's notes, comparing those with the FB instructions, and then comparing that with my cable that I realized The Dear Old Alchemist was right: there was *indeed* an error in the FB cabling directions!

The pin configurations shown in the FB instructions for the 34-pin card-edge connectors are reversed left-to-right in two dimensions, which can lead to all sorts of brain damage resulting from the mental gymnastics involved in trying to understand the diagram. *[Alchemist's comment: for some months following the experience with the FB rib-*

bon cable I walked in circles babbling to myself and muttering incoherent epithets against the Puff Person. My cure commenced when Bob Woolley mercifully gave me a stock 1200XL with hideously awful video performance. While trying to sort out the 1200XL's video problems my brain received massive doses of hi-voltage ionizing radiation. I'm pleased to report I'm now back to my usual manic self. -BP/ I've drawn up a corrected version of the diagram based on the cable CSS prepared for me (Figure 1). If you decide to make your own cables for your FB I think you'll find this diagram much easier on the neurons than the one accompanying the FB instructions. Hopefully this is something CSS will correct in a future version of the docs.

(I was also informed by The Alchemist that the FB instructions pertaining to different brands of compatible high-density 3.5" drives used with the FB are exactly backwards. Teac drives *do* work fine, but avoid Sony at all costs! Ben has been using 1.44M Teac drives for over a year.)

Check-Out Time

Now that I had the cabling complete, I left my Percom disconnected from the system (since I just wanted to play with the FB drive), stuck a MyDOS disk into the FB drive and powered up the computer. The disk booted up as it should, and roughly 15 seconds later up came the MyDOS menu screen. After congratulating myself, I decided to format a MyDOS disk in UltraSpeed format. After all, fast floppy access was what drove me to purchase the FB in the first place.

In order to put any FB drives into UltraSpeed mode you need to enter the BB's Configuration Menu by pressing a button on the BB. BB Menu selection "A" (Drive Configuration) will allow you to set the drive to US format. While you're in the drive configuration area, pressing the "F" key (Floppy Board Parameters) gives you access to setup parameters for the FB. You can set the size of your floppies (single or double sided; 3.5", 5.25", or even 8") as well as the mode for double-sided disks. The FB allows you to select among XF, Percom, or ATR-8000 modes for double-sided floppies. For me, this ensures I'll be able to read my Percom disks with the FB as well as any DS disks which might have been written by an XF551. In other words, complete compatibility with virtually all double-sided Atari drives!

Once I had configured my floppy appropriately I escaped back to the main BB menu. When you're formatting a disk with the FB, you have two options as long as you aren't using a high-density (HD) drive. You can format the disk with your favorite DOS as you normally would, or you can use the floppy formatter built-in to the FB to create a MyDOS or SpartaDOS disk. HD floppies require the use of the FB formatter, as neither DOS is capable of formatting a HD diskette. As an experiment, I decided to time both methods. It took 44 seconds to format a DS/DD disk in US mode with both MyDOS and the FB routine. With the disk formatted, I returned to the MyDOS menu, wrote the DOS files to the disk, and rebooted the computer. This time the machine booted in about 4 seconds.

These benchmark tests were positive indicators, but I decided to try the FB floppy in US mode with a software package that I use regularly, Your Personal Net Worth. YPNW is a commercial package (originally marketed by Scarborough Systems) that lets you keep track of budgets,

expenses, investments, and other things financial. I use it to track our household income and expenses and usually boot it up about twice a week. Since this is one of the copy-protected packages that I've been able to successfully back up with Chipmunk (an archive program originally sold by Microdact), I was able to make a copy of the software onto a US formatted floppy. Now, instead of YPNW taking 28 seconds to boot, it takes 7 seconds. The data disk (which I've also formatted in US mode) now loads in 1 second, down from 4 seconds for a normal disk. I used to boot the program and then go get something to drink; now I barely have time to get out of the chair.

Getting Messy (DOS)

Two other attractive features of the FB (at least to me) are its ability to control high-density (1.44M or 1.2M) floppy drives and to read MS-DOS disks. I have a 80286-based PC clone on my desk at work and am constantly bringing things home on disk. The Internet archive site at the University of Michigan has a lot of software for the 8-bits, but it's a tedious chore to get the files onto an Atari disk. What I do now is copy the files from atari.archive.umich.edu (the location of the archive) to our Sun workstation and from there copy them to an MS-DOS floppy. I bring the floppy home and use Charles Marslett's "Util" package on my PC at home to write the files out to an Atari-formatted disk. "Util" can be a temperamental beast, though, and many times it generates errors when trying to access the Atari disk. By the time I've successfully copied the software to an Atari disk I'm often ready to throw something at the monitor on my PC.

The FB greatly simplifies this task with "BBXFER", a neat little CSS program that comes on the Utilities Disk supplied with the FB. BBXFER enables you to read an MS-DOS disk directly on your FB drive with a minimum of fuss. Since my PC has a high density 5.25" (1.2MB) drive, I decided to pick up a second HD floppy mech for my Atari as well. (I bought it through the "Swap 'n' Shop" column here in *AC*.) I installed the drive in the PC case which serves as home for my 800XL and BB/FB combo, plugged it into my FB's ribbon cable, and loaded BBXFER.

Which Key is Which?

I had a few files on an MS-DOS disk I wanted to copy over to the Atari, so I loaded the disk into drive 2 (the HD drive), hit SHIFT-2 to get a directory listing, and watched the software display the message "PC Drive 8 DIR:". This struck me as rather curious; I could've sworn I pressed 2, not 8. I then stuck a blank floppy into the drive and formatted it as a high density MyDOS disk. I hit 2 to get a listing of the MyDOS disk: it came up with 4626 blank sectors, just as it should. I thought it odd that I could list an Atari disk but not an MS-DOS disk when I suddenly realized what had happened.

I don't have a standard keyboard for my 800XL. I'm using an 84-key PC-style keyboard with TransKey, an interface board from Dataque Software that permits you to use a PC keyboard with the Classic Atari. The layout of some of the non-character keys on the Atari keyboard is different from that found on PC keyboards. I checked my trusty old 800 and found that SHIFT-2 corresponds to the double-quote (") character, while on the PC keyboard it's the at sign (@). So I stuck the MS-DOS floppy back into drive 2 and hunted around for the double-quote on the PC

keyboard. (It's beside the RETURN key.) When I pressed it drive 2 stirred to life, and I was presented with a listing of all the files on the MS-DOS floppy. I then proceeded to copy all the files from my MS-DOS disk to a MyDOS disk incurring none of the hair pulling problems I encounter with "Util".

It would be nice if CSS could make a few minor modifications to BBXFER to enable Transkey users to get listings of MS-DOS disks without having to resort to non-intuitive keystroke combinations. I'm not sure, though, how it could be done as there are a number of problems involved. The "@" sign, as an example is SHIFT-8 on the Atari and SHIFT-2 on the PC keyboard. How can the software tell if a TransKey is installed and whether or not the "@" means SHIFT-2 or SHIFT-8? It's not obvious to me, either. If anyone has any great insights I'd love to hear them.

Finishing Up

The Black Box/Floppy Board combination is a very slick piece of hardware. It's solidly built and supported. CSS is one of only a handful of vendors who have continued to develop new products for the 8-bit in our declining market. It's a testament to the reliability and reputation of the BB/FB (and of CSS) that although you can always find used Atari equipment for sale (including the now-discontinued MIO from ICD), I have never once seen a used BB or FB for sale.

Apart from the little glitch with BBXFER, my BB/FB combination has performed flawlessly. I've encountered no problems in reading any of my copy-protected commercial software or the double-sided disks created by my Percom. I enjoy not having to wait an eternity for a disk to load and am particularly impressed by the ease with which the package can read MS-DOS format disks. I've even mellowed out to the point where I can patiently wait for the microwave to do its thing. As long as it's not too long.

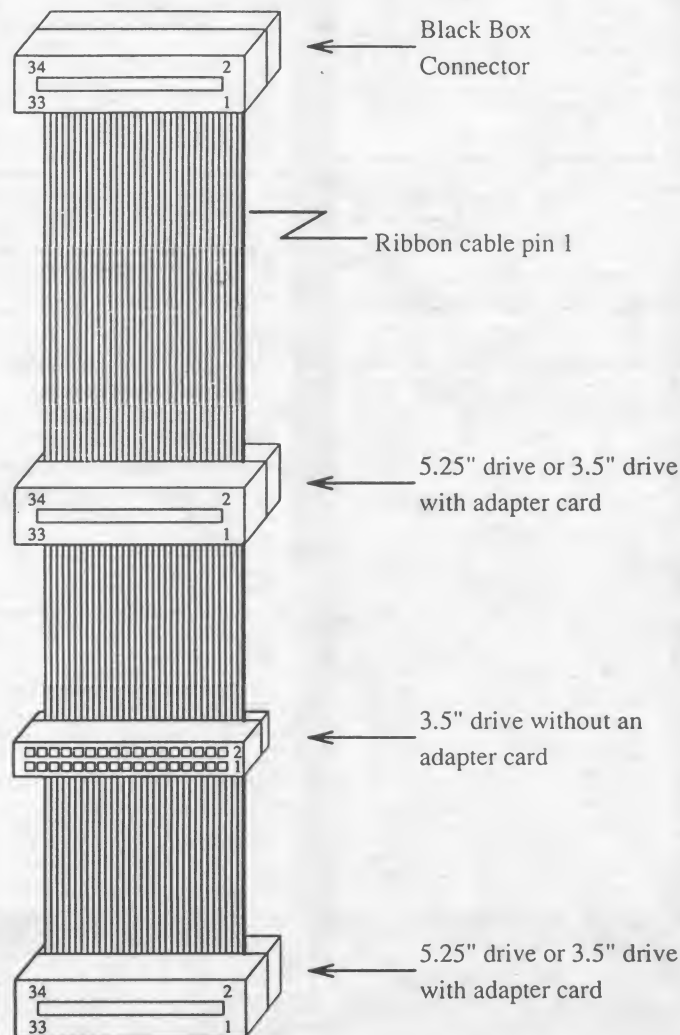
[Editor's Note: The BB/FB here at AC's Editorial Offices has suffered heavy use/abuse for over a year with essentially flawless performance. It drives a hi-speed modem, a 24-pin printer, a hard drive, and four HD floppies. The BBXFER utility is a godsend for editing, since some authors submit manuscripts in MS-DOS format. That bony-fingered Alchemist guy did finally manage to unearth a trivial cosmetic flaw in the FB which I find insignificant: if you access a PBI floppy designated D4:, the D4: READY light stays on after drive access ceases. The light goes out when you access a lower-numbered PBI floppy. I love the BB/FB so much that if CSS sold one with chocolate icing I would eat it. -BP]

Next time: Now that I've got all this nifty hardware, it's time to do some really serious tinkering.

Products Mentioned:

Floppy Board
Computer Software Services
P.O. Box 17660
Rochester, New York 14617 USA
(716) 429-5639
Price: \$149.95

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ATARI CLASSIC DESKTOP PUBLISHING

by Stephen Wallace
AC Contributing Author

Much has been written describing the capabilities of desktop publishing (DTP) systems. Modern DTP programs for ST/TT, Mac, Amiga, or IBM/PC computers allow versatile manipulation of high resolution text and graphics. Output is usually printed by a laser printer for highest quality copy. With the use of the following suggested programs, equipment, and procedures, illustrated "newsletter" style documents may be produced with Atari Classic computers. You'll need an XE or XL computer with at least 64k of RAM, or a 400/800 with at least 48k. One floppy disk drive will be required (two is helpful), and a 9-pin Epson compatible printer with suitable interface. Near letter quality (NLQ) text from inexpensive 9-pin printers is very readable, and 160 X 192 dot graphics is adequate for simple black and white pictures, diagrams, and graphs. Any type document - a school report, technical article, or letter will benefit from easily read type and supportive pictures. And all from hardware you probably already own.

| PROGRAM TITLE | FUNCTION | 8-BIT SYSTEM |
|------------------------------|---|-----------------|
| Dot-Magic | Text & Graphic Print Pgm | XE/XL |
| Word Magic/ Graphic Magic | Text & Graphic Print Pgm, Word Proc, Graphics Conv | All |
| TextPro 4.0X+ | Word Processor | All |
| Creative Process 1.8 | Outline Processor | All |
| BCalc | Spreadsheet | All |
| Atari Artist | Touch Tablet Drawing Pgm | All |
| BBK Artist | Joystick Drawing Program | All |
| Superhop | Joystick Fractal Program | All |
| Picture Perfect | Picture Editor | All |
| Picture Converter | Graphics Converter | All |

Think of your computer system as a toolkit. Now imagine a few programs (tools) that do specific jobs. If you have the tools and know how to use them,

you'll be able to print attractive illustrated documents. All of the programs shown in the accompanying table were developed independently to serve specific functions. When used on projects collectively, each can offer its own specialized contribution. An abundance of word processors, graphics programs, and utilities have been written for Atari Classic computers over the years. Titles other than those listed may also serve as DTP tools.

None of these suggested programs are new. In fact most of them predate powerful enhancements available today. The tools listed all function with unmodified Classic computers and floppy disk drives, Atari DOS 2.0s or 2.5, and 9-pin Epson compatible printers. Word/Graphic Magic, Creative Process 1.8, and Superhop did not run properly under MyDOS 4.5 during a brief test. The menu highlighting feature of TextPro 4.0x Plus did not work with MyDOS 4.5, though other functions seemed fine. How these DTP tools behave with other advanced DOS's, expanded memory, hard drives, or 24-pin printers is beyond the experience of this writer to know. Hopefully, owners of enhanced Classic systems will be able to furnish that information based upon experimentation.

Dot-Magic is a public domain program written in compiled Turbo-BASIC for XE/XL machines. It runs in conjunction with the Turbo-BASIC RUNTIME.COM file (usually named AUTORUN.SYS). This file is provided on the Dot-Magic disk, so you don't need Turbo-BASIC to use Dot-Magic. The author's identity is not known, given only as "The Cryptic Wizard" in the program documentation. The Wizard grants full credit to Roy Goldman, creator of Daisy-Dot, the original NLQ document print program. Daisy-Dot and Daisy-Dot II are in the public domain. Daisy-Dot III is a copyrighted document print program available directly from Mr. Goldman. Dot-Magic uses special Daisy-Dot font files and will print proportional NLQ text on Epson or Prowriter compatible printers. Several fonts are included with Dot-Magic. Be aware that your document print style is defined by the font you select. Your printer will be operated in graphics mode and need not have NLQ text capability to work with Dot-Magic.

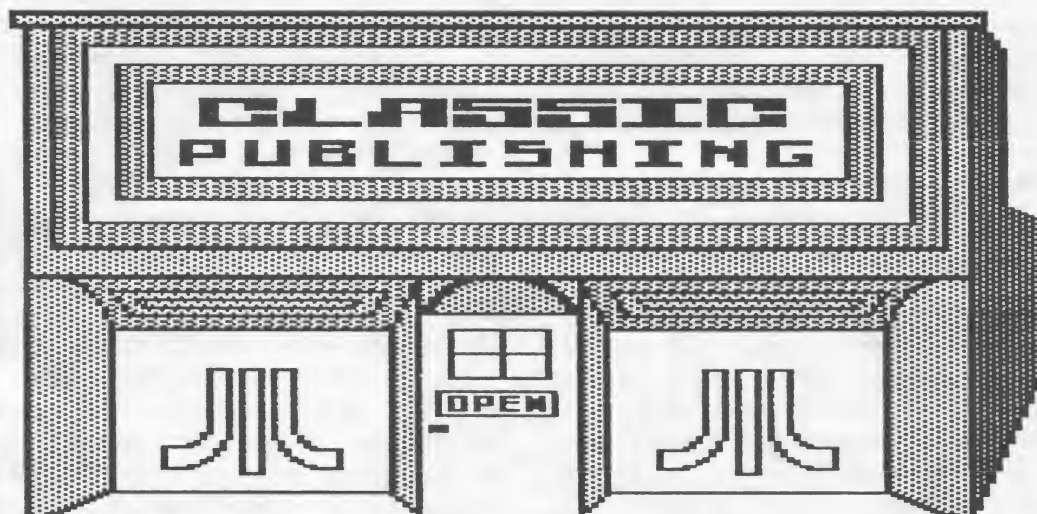
Utilities are available to convert 9-sector Atari character set files to Daisy-Dot NLQ fonts, and to convert proportional Daisy-Dot fonts to justifiable fonts. Proportional fonts are best used for printing "ragged right" text with an uneven right margin. Justifiable fonts may be used to print fully justified text if your word processor supports that feature. An extensive Atari font library was included on the May 1992 AIM disk of the month.

(Note: The justifiable font converter utility has a bug that repeats a portion of the file's name in the converted font file. Load the converted font into a word processor and use the search/replace feature to strip out the unnecessary characters. Resave the file to produce a usable font.)

Commands embedded within text files written with a word processor invoke certain features while Dot-Magic prints your document. Text manipulation such as centering, double width characters (boldface), and variable character density are available. Underscoring is also supported, subject to word processor capabilities. Double column printouts are possible by alternating word processor margin commands for odd (left column) and even (right column) pages. Other commands cause font changes or pictures to be printed. Pictures may be printed full left, full right, or centered upon the page in three sizes. Either MicroIllustrator (compressed) or MicroPainter (62-sector) picture files may be

Magic by Jim Thompson are machine language programs from ANTIC Publishing. A BASIC install program is included with the software package to set user defaults.

Word Magic users have the advantage of a full featured word processor built into the Word Magic/Graphic Magic package. For Dot-Magic users, a separate word processor will be required. When entering text for Dot-Magic, the main requirement is the word processor must be able to PRINT text to a disk file. Saving and printing to disk are not the same. A printed file has margin and paging information (space and return characters) necessary to position text upon the printed page. A saved file has symbols that only TELL the word processor how to send text to an external device. Textpro 4.0X Plus by Ronnie Riche is a shareware word processor and has many fine features. It does well for ordinary writing, or for preparing files for printout with Dot-Magic.



intermixed with text. Picture aspect ratio (horizontal to vertical proportionality) is slightly, although not objectionably, distorted by Dot-Magic.

Word Magic is half of a program package for producing illustrated documents on any Atari 8-bit computer. It is the text processor and printer portion. Italic, underlined, double wide, and centered text is supported in both normal and enhanced fonts for most printers. Graphic Magic is the other half of the Word Magic/Graphic Magic package. Graphic Magic is a picture converter program. It is used to convert MicroIllustrator, MicroPainter, B-Graph, or Graphics 8 picture files into files printable with Word Magic. It will also allow Graphics 8 style text to be typed onto a picture and saved in a Graphics 8 file. Commands embedded in text written with Word Magic will cause pictures to be intermixed with text in your printed document. Two correctly proportioned sizes of pictures may be printed. Word Magic and Graphic

An extremely useful program to any aspiring writer is an "outline processor". ANTIC's Creative Process 1.8 by Dave Thorson can help generate an outline that will really get your ideas flowing. Points are typed onto the screen in any order you wish. Subpoints may be entered under the mainpoints as in a hand written outline. Enough text may be added beneath main or subpoints to make a paragraph. If you want to rearrange points in the outline, any text and subpoints below it will follow in the correct order. The outline may be printed, or stored in a file that may be entered into your word processor for further refinement.

Spreadsheet programs are usually used for bookkeeping. They may, however, be used to organize any type of tabular information. Listed, or ATASCII spreadsheet files may be incorporated into most word processor text files. BCalc by Barry Kolbe and Bryan Schappel is a spreadsheet published by ANALOG COMPUTING (August 1988 issue 63), and capable of

generating ATASCII files.

Picture processors are used to draw, label, and manipulate pictures. BBK Artist is a joystick drawing program published by ANALOG COMPUTING (July 1987 issue 56). It is a machine language program by Barry Kolbe and Bryan Shappel. BBK Artist is particularly useful for making drawings with lines, rectangles, circles, or ellipses. Freehand drawing of irregular shapes is rather difficult. Shapes may be drawn or filled with four solid colors or thirteen patterns. Pictures may be labeled with most any size text using this program. Atari 9-sector character fonts may be loaded to determine the text style. For small size text, standard or square fonts work best, and may require touchup. The program will load either MicroIllustrator or MicroPainter picture files. It saves to disk in only the MicroIllustrator format. (Note: The type-in version from the magazine requires modification of the RUN bytes to allow it to run as a load-and-go program. The object code occupies memory from \$2A28 to \$4BC7. At the end, RUNAD bytes \$02E0 and \$02E1 should be set to \$28 and \$2A respectively. That will cause RUNAD to point to \$2A28, the beginning of the program in 6502 low byte/high byte fashion. Refer to the section on Binary Save, page 47 in the DOS 2.5 Owner's Manual.)

The Atari Touch Tablet with its cartridge based Atari Artist software is useful for drawing irregular shapes, rectangles, circles, and lines in colors and patterns similar to BBK Artist. Rough tracings are possible by following an outline with the tablet stylus. MicroIllustrator picture files may be created, loaded, edited, and saved. No provision is made to allow text to be typed onto a picture. This Atari peripheral, or the similar Koala Pad, may be difficult to find.

The executable Action! version of Superhop by Douglas Skrecky is an interesting joystick controlled program for observing fractal generation. Although not a drawing program per se, the MicroPainter picture files it generates may be used as backgrounds for artistic illustrations.

Joe Brzuszek's Picture Perfect is a BASIC program which may be described as a "picture editor" (August 1989 ANALOG COMPUTING issue 75). Up to one half of a picture may be doubled or halved in size, flipped horizontally or vertically, or moved from one screen location to another. Portions of one picture may be buffered and "rubber stamped" onto another picture.

Because the graphics programs just described handle pictures in two incompatible formats, a converter may sometimes be required. Picture Converter is a BASIC program included with an ANALOG COMPUTING article entitled Atari Picture Storage Techniques. The article by Charles F. Johnson was published in the January 1987 edition of that magazine (issue 50). The program will convert between MicroIllustrator, MicroPainter, or Fun With

Art picture files.

Efficient use of each program discussed will require practice. Program documentation included with disk software, or obtained through associated magazine articles, will prove useful for instruction and reference. Collectively, use of DTP tools for production of illustrated printed matter requires many steps. The order in which the steps are performed is somewhat flexible. A suggested procedure follows.

First, choose the type style for your document. Word Magic uses the printer's normal or enhanced fonts. Dot-Magic will print a variety of fonts limited only by the Daisy-Dot files available. For Dot-Magic printouts, your word processor settings will determine margin widths, word wrap, and justification. A somewhat technical dissertation is necessary. Run Dot-Magic and select the "Typewriter" option from the main menu. Load a font, type several lines of text into the screen window, and press START to print it to your printer. Try other fonts until you find the one you want to use. Configure the font you've chosen by adjusting the "density" and "spacing" specifiers until the print is the way you want it. Count the maximum number of characters, including spaces, that may be printed across a full page for that configuration. Let's call the maximum number of characters per line "MCL". Make a note of the font's filename, density, spacing, and MCL. Those first three parameters will be needed when the font is loaded at printout time. The MCL number will be used to set word processor margins. Justifiable fonts will have an absolute MCL because each character occupies an equal width. Characters in proportional fonts occupy different widths, so their MCL will be approximations. Documents don't have to be printed across the full width of the page. In fact, it's desirable to leave margins on either side. However, care should be taken that your word processor doesn't send more characters per line than the font can print. If it does, Dot-Magic will ignore characters in excess of the font's capacity. The bottom line: Depending upon how your word processor determines the number of characters it sends per printed line, set page width and margins so the font's MCL, as configured, won't be exceeded.

Use your word processor to write and edit text applicable to your chosen subject. Dot-Magic or Word Magic commands for centering, underlining, inserting boldface type, pictures, etc. may be included at any time. Merge tabular data from a spreadsheet, if desired. If you're using a word processor with the standard 40 column screen, proper paging will have to be determined before the document is printed on paper. All word processors have methods for setting line and page lengths for printed text. Take care that illustrations don't print across page boundaries. Documentation for both Dot-Magic and

Word Magic show how to handle picture space within text files. Projects too large to complete in one sitting may be saved to disk between sessions. The final text file for Dot-Magic will have to be printed to disk.

Existing picture files may be edited, or new pictures drawn using any of several drawing programs. Unlike "page layout" software that allows only supplied "photos" to be intermixed with text, Dot-Magic and Word/Graphic Magic print pictures of your own design. Labels may be added to pictures with Graphic Magic, BBK Artist, or other drawing programs. Labels may be desirable when graphically describing a mechanism, a simple electrical circuit, or a bar chart, for example. Labor intensive "special effects" may be done more easily with a picture editor such as Picture Perfect.

Once pictures are complete, save them to uniquely named disk files. In order for individual picture processors to manage pictures in their respective formats, pay attention to picture file extenders. BBK Artist saves and loads MicroIllustrator pictures with the PIC extender. It will also load MicroPainter pictures with the MIC extender. Atari Artist requires PIC and loads and saves only MicroIllustrator files. Picture Perfect loads and saves only MicroPainter pictures, but is not extender sensitive. Dot-Magic will directly print pictures in MicroIllustrator or MicroPainter formats. Graphic Magic will convert those types (and others) to a form compatible with Word Magic. Neither print program

is extender sensitive.

After text and pictures are written, drawn, edited, and stored on disk, they may be fed to the page printer through the printout program. Your text file, and any picture and font files specified within it, will have to be accessible to the computer. If two disk drives are available, the text file could be placed in one drive, and picture files in the other. This practice is especially recommended for Word/Graphic Magic users since converted picture files tend to be rather large. If font changes are to be made while printing with Dot-Magic, those fonts could be copied to either disk. If only one drive is available, all necessary files will have to be stored on the same disk. Proficiency with your DTP toolkit will result in your ability to draw, write, edit, and print an illustrated document with a minimum of errors.

Where can you get DTP tools? The programs mentioned are available from several sources. Check PD/shareware catalogs such as C&T ComputerActive, Software Infinity, and Vulcan Software. B&C ComputerVisions' catalog lists several of the titles including the ANTIC programs. BCalc, BBK Artist, Picture Converter, Picture Perfect, Superhop, and many ANALOG COMPUTING programs are available for download from Delphi's Atari 8-bit database. Good luck with DTP on your Atari Classic!

This article was produced with the programs and procedures described, and printed with Dot-Magic.

SPECIAL!!! SPECIAL!!! SPECIAL!!!

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7 double sided disks full of Desktop Publishing programs. As described in ATARI CLASSICS special issue on 8-bit DTP (August 1993)!

Programs include:

| | |
|--|----------------------------|
| Daisy Dot II (with Billboard), | Dot Magic (with utilities) |
| Dot Fonts (standard & justifiable), | Textpro 4.54 |
| BBK Artist | B-Calc |
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Dream Street: Products We'd Like To See

(Still some good opportunities for hackers, programmers, developers, and entrepreneurs.)

New protocols for BobTerm: KERMIT, ZMODEM, and ANIS.

A 24-pin Epson driver for Daisy Dot III with correct aspect ratio.

A serial (SIO) buffer for slow printers like the 1027 and 1025.

A PAL programmer.

An adapter to convert composite video to TTL video (MDA, CGA or VGA).

A really good VT-100 emulator for BobTerm.

An 8-bit version of the ST program Aladdin for GENie users.

A high quality electronic schematic drawing program with a 24-pin driver.

A utility for converting Print Shop fonts to Print Power format (see Note below).

A 256K upgrade for the 600XL (perhaps utilizing 44256 DRAMs).

A drawing utility for Print Power.

An IDE hard drive interface.

A patch to AtariWriter+ & -80 to use more than 128K if available, in 16K blocks.

Note: Don Burgess wrote in to say No Frills Software (800 East 23rd St., Kearney NE 68847, phone 308-234-6250) published a program called "The Converter" in 1987 that performs this task. We don't know if No Frills is still in business.

Got an idea for a product? Send it in! If we think it looks good, we'll add it to this list!

Exploring The Wild FONTier

by David Richardson
AC Staff Columnist

This column is not the result of the desktop publishing of Unicorn Publications. It was printed entirely by a program called Daisy Dot III, a print processor. The printer used was a Star NX-1000, and the DOS was SpartaDos 3.2d. A camera-ready copy was sent to the publishers and they then inserted it directly into the magazine. DD3 is a shareware program. See the information at the end of this article if you are interested in acquiring DD3.

Picking up where we left off last time, let's continue with describing DD3's features, starting with indentions.

Good Indentions

DD3 has three ways to indent. The first way is called the relative shift. The relative shift command is `\XSnnn`, where the "nnn" is a three digit number. This command shifts the print head $nnn/40$ " to the right of the current position of the head, no matter where it is, as long as the right margin isn't exceeded. If you use the command `\XS020`, then the print head will move one-half of an inch to the right of where it is presently located. Thus, the same command will shift the print head at different places throughout the document, depending on where the print head is at the time of the command. According to DD3's documentation, the print head may have to move slightly to align itself with a position evenly divisible by $1/40$ ". Also, this command should only be used with block left or justification alignment, and not block right or centering. I use the relative shift for indenting paragraphs. I start each paragraph with the command `\XS010`, which will indent the paragraph one-quarter of an inch.

The next way to indent is called the absolute shift. The absolute shift command is `\XAnnn`. Again, the "nnn" is a three digit number. This command shifts the print head to the absolute position $nnn/40$ " across the page from the left EDGE of the paper, not the left MARGIN, as long as that new position doesn't exceed the right margin or isn't to the left of the current position. Thus, the same command will position the head at the same place every time, since it always measures from the left edge of the paper. Again, this command should only be used with block left or justification alignment. Both of these commands are legal anywhere.

Another way to indent is what is called a hanging indent. The hanging indent has two commands to chose from, depending on what you want. One is a relative hanging indent, the other is an absolute hanging indent. The first command is `\XHH`. This command sets the indentation at the current print head position so that every line thereafter will be indented from the left margin to wherever the command was first encountered.

Here is an example of what you can do with a hanging indent:

1. You can use the hanging indent to type in a number and then move over two spaces and have every line after that one line up with the first line of text, rather than all of the way to the left margin. Notice how all of the text after the first line lines up with the "Y" in the word "You".

NOTE: One problem with the hanging indent is that once it is set, for all intents and purposes the left margin is reset to wherever you put the hanging indent command. If you want to go back to your original left margin, then you must re-enter your left margin command to whatever you had it set at originally. Notice how all of the text after the first line lines up with the "O" in the word "One".

Here is what the actual text looks like for the above example:

1. \XHHYou can use the hanging indent to type in a number and then move over two spaces and have every line after that one line up with the first line of text, rather than all of the way to the left margin. Notice how all of the text after the first line lines up with the "Y" in the word "You".
\XLI65

NOTE: \XHHOne problem with the hanging indent is that once it is set, for all intents and purposes the left margin is reset to wherever you put the hanging indent command. If you want to go back to your original left margin, then you must re-enter your left margin command to whatever you had it set at originally. Notice how all of the text after the first line lines up with the "O" in the word "One".
\XLI65

The other hanging indent command is the absolute hanging indent `\XHnnn`. The second H of the first command is replaced with three digits, representing $nnn/40$ " from the left edge of the page. With the `\XHH` command, the indentation is always different, depending on where the print head is when the command is encountered. With the `\XHnnn` command, the indentation will always be the same distance from the left edge of the paper. Here is an example of how to use the absolute hanging indent:

1. The absolute hanging indent is used the same way as the relative hanging indent. Simply replace the second H with a three digit number.

NOTE--Again, notice how all of the lines after the first one are lined up with the above paragraph. See how nice it looks to have everything in both paragraphs line up?

Here is what the actual text of the above example looks like:

1.\XA175\XHHThe absolute hanging indent is used the same way as the relative hanging indent. Simply replace the second H with a three digit number.
\XLI65

NOTE--\XH175Again, notice how all of the lines after the first one are lined up with the above paragraph. See how nice it looks to have everything in both paragraphs line up?
\XLI65

You may want to note how I used the absolute shift command, `\XA175` after the "1." so that the "T" in the word "The" in the first line would line up with rest of the paragraph.

If you use the same numerical value throughout the document, you can be assured that everything will line up. I really like the hanging indent command because all of the word processors for the Atari that I used did not have a command that did the same thing, at least not as easily. In AtariWriter, for instance, you had to figure out what the amount of the indent was and then embed a left margin command with that value within the paragraph. You then had to re-enter the left margin command to go back to the original left margin. With this hanging indent, you simply enter the command at the beginning of the text and that's it,

there is no need to sit and figure out what the amount of the indent is.

Tabs

The best way to tell you how DD3 handles tabs would be with an excerpt from the DD3 documentation:

"DD3 includes full support of proportional tabs. Up to 10 tabs can be set at a time. Each tab can be left (standard), center (specified text centered around the tab), right (end of specified text lined up with the tab), or decimal (right tab that lines up decimals within numbers). Also, dot leaders can be printed with each tab."

To place a tab, use the position tab command, `\P`, followed by an L, C, or R. You must put one of these three letters after the command. As you place each tab, you must decide how you want the information for that particular tab to be printed. If you want the information to be printed starting at the tab, or block left, use an L. If you want the information to be centered at the tab, use a C. If you want the information to be block right, or lined up on the right edge, use an R.

To place a tab where you want, you can do it several ways. You could do it like you would on a typewriter, and simply space over how far you want and then type `\P`, (don't forget the L, C, or R). You could place a tab by using the relative shift command, `\XSnnn`, and then follow it immediately with the `\P`. You could also place a tab by using the absolute shift command, `\XAnnn`, and then follow it immediately with the `\P`. By using either the relative or absolute shift, it is easier to place tabs at specific distances.

Use the erase tabs command, `\E`, to erase all tab settings. It would probably be a good idea to always use this command before entering any tabs, so that any old tabs that might still be in the text will be erased. Sometimes I include the erase tabs command at the beginning of my documents so that this is automatically taken care of. The erase tabs command is legal in a new line after a hard return, or in the first line of a file, before the first character to be printed as text on that line.

To use the tab in your document once the tabs are set, use the tab command, `\T`. Use this command just as you would the tab key on a keyboard. When using this command, keep track of whether the tab in question is either a centering tab or a block right tab. If it is either one of these, then you must use the `\Z` command, which marks the end of text for a corresponding center or right tab. Once you type the `\T` and follow it with your text, you must then follow the text to be centered or blocked right with a `\Z`. Here's an example of how to use the tabs:

| | | | |
|---|---------|---------|-------|
| 1 | John | Quincy | Adams |
| 2 | James | Knox | Polk |
| 3 | Ulysses | Simpson | Grant |

Here's the text for the above example:

```
\E\XS025\Pr\XS020\Pr\XS020\PI
1\TJohn\Z\TQuincy\Z\TAdams
2\TJames\Z\TKnox\Z\TPolk
3\TUlysses\Z\TSimpson\Z\TGrant
```

If you wish to tab with a dot leader, simply replace the `\T` command with the dot leader command, `\..`. Here is the

same example as before, but with some of the tabs using a dot leader:

| | | | |
|---|-------------|--------------|-------|
| 1 |John | Quincy | Adams |
| 2 | James | Knox | Polk |
| 3 | Ulysses | Simpson..... | Grant |

Here is the text for the above example:

```
\E\XS025\Pr\XS020\Pr\XS020\PI
1\..John\Z\TQuincy\Z\TAdams
2\TJames\Z\..Knox\Z\TPolk
3\TUlysses\Z\TSimpson\Z\..Grant
```

If you recall my last article, I said that if you use the centering command, `\C`, the text is centered based on the default margins you used when setting up DD3, so that if you change the margins within a file, such as the double columns you are now reading, the text will not be centered according to the new margins. The way around this is to set up a tab half-way between your new margins, and use the centering option for that tab. Your command for this would be `\Pc`.

You may also recall that I said I use the relative shift command, `\XSnnn` for the indentions of my paragraphs, rather than use a conventional tab. The reason for this is because if I use other tabs in the text, I didn't want to have to erase the tab for the paragraph indentions, set up the tabs for the text, and then erase them when I am done and re-establish the tab for the paragraphs again. It is easy to forget about the tab set for the paragraph and then wonder why the other tabs don't work. Also, if for some reason you need all ten tabs available for the text, the tab for the paragraph indentation would use up one of them, leaving only nine. It is much easier, at least for me, to simply use a relative shift and not worry about it. It simply gives me one less thing to worry about.

If you have a column of numbers, and you want them to line up, say, at the decimal, simply use a `\Pr` command for the tab, and when you tab over using the `\T` or the `\..`, type the number up to and including the decimal, then type the `\Z` command, and then type the numbers after the decimal. Here is an example:

| | |
|--------------|------------|
| Item 1..... | \$5.11 |
| Item 2 | \$35.49 |
| Item 3 | \$2,034.96 |

Notice how the decimals line up. Here is what the above example looks like as it is actually typed in:

```
\E\XS050\Pr
Item 1\..$5.\Z11
Item 2\..$35.\Z49
Item 3\..$2,034.\Z96
```

I will go over more DD3 commands in the next issue. Please feel free to write me at:

David Richardson
P.O. Box 746
Lawrence, KS 66044
(913) 843-5213

To get DD3, send \$25 to:

Roy Goldman
2440 South Jasmine
Denver, CO 80222

THE HEWLETT-PACKARD DeskJet 500: A NEW WAVE IN 8-BIT Desktop Publishing?

FRANK KWEDER, AC CONTRIBUTING AUTHOR

Changing With The Times

CHANGE is what we need! Throw out the Old and embrace the New! Well, the only CHANGE you get may be the "change" in your pocket where your wallet use to be! I suggest you can "invest" your money and make a "contribution" to upgrading your computer infrastructure (I don't know what effect this will have on the national debt). But, why buy a new horse and wagon when the horse you've got is fine? Just look for the right wagon!

My new wagon is the Hewlett-Packard DeskJet 500 inkjet printer. At under \$400.00, the DJ500 is priced near top quality dot matrix printers. A look at *Computer Shopper* will show that, new or used, DeskJets are getting cheaper and cheaper. While there are newer (and older) DeskJet models, the "500" best fits the requirements of the Classic Atari.

Inkjet Techno-Miracle

The DeskJet 500 is larger than most dot matrix printers (17.3" wide; 14.8" long; 8" high), but is self-contained, meaning there are no external knobs or paper path requiring extra space. The paper (up to 100 sheets) fits in a tray at the bottom and feeds automatically. All movement is controlled by panel buttons. There is a special guide for inserting #10 envelopes (one at a time).

DIP switches are easily accessible on the front. Serial and Centronics ports are located underneath. You can transfer your existing printer cable with no problem. There are two socket receptacles for font and memory cartridges (more about these later). Rollers, guides, etc. are all easily accessible for cleaning, making maintenance a breeze. Print speed is comparable to dot matrix but startlingly quiet! The manual is excellent with lots of examples and diagrams.

I said above that the printer was self-contained: well, almost. The Nostalgia Factor rises here because, like most of your Atari equipment, a big black power supply box joins the spaghetti and square meatball family behind your computer. But I'm here to tell you the addition of a little more to your existing tangle will be worthwhile.

Paper Panoply

Standard paper size is 8 1/2" X 11", but the paper guide can be extended to accommodate 14" lengths. I use plain copier paper or special inkjet and laser papers, whatever gives me the results I like. I also preprinted stationery featuring a cloudy sky with a rainbow in the corner, and other designs with trees or textures or graduated color scales. Papers in various colors, weights and textures add a great new look to anything you print.

Inky Tales

Ink comes in a special cartridge and at about \$15 is more expensive than ribbons. A newer type of cartridge at \$25 has recently been introduced which holds twice as much ink. Handled with care, you can refill and re-use the cartridges many times. Refill kits are available in black or blue. You get two refills per kit for about \$15. A great feature of the DeskJet 500 is an ink-saving draft mode.

In addition, Computer Friends Inc. in Oregon - a great source for ribbon inks in the past - offers a variety of inks in many colors, including bright process inks (magenta, yellow and cyan). The DeskJet 500 is not a color printer, but I've used YEMACYB, the best program for making color prints in 128 colors, with excellent results. The ability to feed the same sheet of paper through the printer again and again with near perfect registration makes this possible.

Internal Fonts

The DJ-500's standard internal fonts are less than the latest dot matrix printers provide. They are: Courier, Times and Letter Gothic (sans serif). They come in two sizes: 12 point and 6 point (72 points = 1"). Only the Courier and Letter Gothic come in multiple widths: 10, 16.67, 20 CPI (characters per inch). Times is proportional. Only the Courier font can be selected with panel buttons. You must use escape codes to access the others. The BASIC program, DESKJET.BAS, which accompanies this article will demonstrate some of the font variations you can achieve.

The fonts all print vertically (portrait mode). In addition, Courier can be printed horizontally (landscape mode). This should appeal to Syncalc users. Paper length of 14" and CPI's up to 20 should give you an approximation of how wide a sheet you can make.

Font Cartridges

Hewlett-Packard font cartridges include several sizes of one font. The actual number depends on font characteristics and size. Larger sizes take up more memory space. There are also non-HP cartridges available.

The HP carts cost around \$80 each. These are also available used for less than half that price. The non-HP carts are about \$100-120, but are a bargain because they contain four times as many fonts and sizes. A big advantage of the HP carts is that font sizes are selectable with the panel buttons. The non-HP fonts are only selectable by escape codes (unless, of course, you can create a printer driver).

Memory and Graphics

Memory cartridges are available in 128K and 256K. They are expensive and are used for "soft fonts" which are downloadable from disk. This isn't a likely option for the Classic Atari owner, although it's possible that high interest might generate action by our programming community.

How about graphics? What about the older wordprocessing software with no printer driver for an inkjet? There is an Epson emulator cartridge which allows your DeskJet 500 to imitate an Epson FX80. The DJ500 can print 75, 100, 150 and 300 DPI (dots per inch). Your graphics won't print at a higher DPI, but they'll look sharper. All the usual Epson font types and sizes (including a few even the Epson can't do!) are available.

Word Processing

I use First XLent Word Processor and made a printer driver for the usual bold, italic, and underline font modifications. Using the Courier font, XLent works exactly as before (without the Epson emulator). Letter Gothic also works, but must be activated by sending an escape code sequence. XLent does that very easily: you can send command codes directly to the printer from anywhere in your document. Using Times, the proportional font, is difficult. The space character, CHR\$(32), varies in size. So you get misaligned columns. Double column printing and margin justification don't work either.

It should be possible to use other Atari word processors effectively. I hope my demo program offers enough insight for you to make that judgement about your favorite writing tool.

Page 21 of this magazine was produced entirely on my DeskJet 500; it was not typeset in the usual way by **AC**'s Publisher. The actual page proof copy was generated by running DESKJET.BAS on my trusty 8-bit. The demo program itself is listed as part of the page. I also used DeskSet!, a font cartridge

from Computer Peripherals, Inc. which includes more fonts, and more sizes for internal fonts. The price last year was \$120, but I've since seen it in a catalog for \$89!

[Editor's Note: DESKJET.BAS will appear on AC's October '93 Software Disk. Non-Disk subscribers can look for it on the commercial networks, where it will be uploaded as DESKJET.ARC. -BP]

DJ500 BASIC Demo

I chose a BASIC program for the demo to show how useful the DeskJet 500 and a font cartridge can be and how easy it'll be to update programs you're already using. I'm working on a mail list database to print envelopes. Oh boy! No more of those miserable label sheets that drive me nuts!

Here's a breakdown of DESKJET.BAS:

Line 10: DIMension some strings.

Line 20: SPC\$ makes it easy to do adjustable spacing with proportional fonts-- every point size is different. E\$ is the escape character. On our 8-bits, we can produce it directly, but the rest of the computing world hasn't caught up with us yet! D\$ is underline dashes to keep the listing neat.

Line 30: I could have used LPRINT, but it won't perform all of the tricks I use.

Line 40: Printer reset to clear all previous settings. DIP switch settings on the printer can be overridden by software, so it's a good idea. The Skip Perforation DIP switch on my machine is set to OFF. Rather than switch it ON, I just do 3 ?#7's. Here you can add other codes like paper length and CR+LF and margins. Default values apply if nothing else is set.

Lines 100-111: Manipulate the first line of text: "Atari Classics presents".

NOTE: HP codes are quite different from Epson codes. They are short, but they are MANY! And, they ****must**** be in the proper order. Not all codes must be repeated to change a font, but an overlooked incorrect code can give you unexpected results! Many small codes can be combined into one long code using lower case letters and a capital for the last code in the sequence. The capital signals the end of the code.

Line 101: "P" comes first and is "1" for proportional or "0" for fixed space. "H" is next but is only used for fixed space fonts. It is the font CPI. "V" is the point size and this is a number nn/72 inch. "S" is "0" for straight and "1" for italic (in this case S=1 would be trouble because this large font is not available in italic!). "B" is "3" and this means bold ON; "0" means bold OFF. FONT is the Hewlett-Packard ID # for the font used (Times). VMI is the Vertical Motion Indicator (line spacing in nn/48 inch).

Line 102: Printer codes subroutine.

Line 103: Read DATA at 2000, sends the code for a floating double underline, and prints some space, a BOLD 30 point "A" plus the underline and holds the cursor in place (LPRINT won't do that).

Lines 110-111: Change point size to 24, BOLD off, print "TARI" and a double space (remember, proportional spaces can be weird!).

Lines 120-121: Back to 30 point, BOLD on, print "C" and hold cursor.

Lines 130-131: Back to 24 point, BOLD off, print "LASSICS presents"

Line 140: Print blank line and underline off.

Line 200: 24 point; italic; bold; Brush font. VMI is still 12. Not needed but here for clarity. Both ITALIC and BOLD are ****required**** to get Brush font.

Line 210: print space and DATA at 2004.

Line 300: 12 point; italic; bold; Univers font. Change VMI to 8/48 (1/6").

Line 310: print space and DATA at 2005.

Line 400: Getting brave, I just turn off italics and bold and change the font back to Times and send the codes!

Lines 410-430: Set up FOR/NEXT loop to read and print the DATA at 2006-2007.

Line 500: Change to fixed space; font width-10CPI; point size-10; italics OFF; FONT=Prestige (like Epson Elite); VMI=8.3! (see next NOTE); send code.

NOTE: Since we're going to print a large number of lines now, we change techniques. A VMI of 8 would leave extra white space at the end of the page. A VMI of 9 would start printing lines on the next page.

Line 510: Set the left margin to 8.

Line 520: LIST the program.

Line 530: Like the "END" statement, the "LIST" statement CLOSEs your I/O channel, so it must be reOPENed.

Line 600: Mostly repeated for clarity. Univers font is selected; VMI is 6.6 to space lettering under underline rule at bottom of page; codes are sent, plus a line feed (LF).

Line 610: Print the underline rule.

Line 620: Print "Atari"; print page number surrounded with commas for best fit to the underline rule (proportional spaces again!); print "Classics".

Line 700: Send code to eject the page from the printer ...it's done!

Line 710: End program.

Line 1010: Put some codes into strings to ensure they are properly represented.

Line 1020: The whole escape code for the font (see NOTE below).

NOTE: The <ESC>"(OU" at the beginning chooses a character set. Not changed for this demo.

Line 1030: Here you have 3 escape sequences: the first is the code to enable the DeskSet! cartridge; the second repeats the character set code (it seems to clear the printer buffer of stray characters); the third code sets a VMI big enough to handle the point size of the font. If too small, you get Egyptian hieroglyphics or running wet ink spots instead of fonts!

Lines 2000-2007: DATA for the first 5 lines of the page.

New Peripherals For Old Machines

Maybe you've been interested in other printers or a hard drive. Many, but not all of the new peripherals work with an Atari 8-bit. Companies and dealers aren't going to look for you and can't answer questions because they don't know you or your equipment. You have to do your own digging, but you might strike gold, allowing you to do things you never dreamed possible without spending a fortune on a new system!

[Editor's Comment: While a few club newsletters- notably the SLCC newsletter- have pioneered the use of advanced printers such as the HP inkjet, this is the first really rigorous tutorial we've seen on the subject. We're really starved for more info on the use of advanced printers and other peripherals with the Classic Atari. Who will be FIRST among our readers to send us an article on using LASER printers with the Classic 8-bit? -BP]

H-P DeskJet 500
Hewlett-Packard Corporation
18110 S.E. 34th Street
Camas, WA 98607 USA
Under \$400 at mass retail outlets.

DeskSet! Cartridge
Computer Peripherals, Inc.
667 Rancho Canejo Boulevard
Newbury Park, CA 91320 USA
Catalog price: \$89.

Ink Supplies
Computer Friends, Inc.
14250 N.W. Science Park Drive
Portland, OR 97229 USA
Write for their catalog!



ATARI CLASSICS presents

Using the Hewlett-Packard DeskJet 500 Printer

...to do some FIRST CLASS printing with your 8-bit Computer!

This page presents a sample of printing in various fonts and demonstrates how a fairly simple BASIC program can do some pretty nifty things!

```
5 REM DESKJET DEMO by FRANK E. KWEDER -- 3/93
10 DIM TEXT$(80),V$(2),FONT$(5),VMI$(3),SPC$(40),H$(6),E$(1),D$(45)
20 SPC$=" ":SPC$(40)=SPC$:SPC$(2)=SPC$:E$=CHR$(27):D$="_":D$(45)=D$:D$(2)=D$
30 CLOSE #7:OPEN #7,8,0,"P:":REM "LPRINT" WON'T DO IT ALL
40 ? #7;E$;"E":? #7: ? #7: ? #7:REM RESET AND 3 SPACES CUZ "SKIP PERF" IS OFF
100 REM CHOOSE FONT AND CHARACTERISTICS
101 P=1:V=30:S=0:B=3:FONT=4101:VMI=12:REM 4101=TIMES ROMAN/P=1(PROPORTIONAL)
102 GOSUB 1000:REM LOAD PRINTER CODES
103 READ TEXT$:? #7;SPC$(20);E$;"&d4D";TEXT$;:REM FLOATING UNDERLINE ON
110 V=24:B=0:GOSUB 1000:REM V=POINT SIZE
111 READ TEXT$:? #7;TEXT$;" ":REM 2001 DATA
120 V=30:B=3:GOSUB 1000:REM BOLD ON (B=3)
121 READ TEXT$:? #7;TEXT$;:REM 2002 DATA
130 V=24:B=0:GOSUB 1000:REM BOLD OFF (B=0)
131 READ TEXT$:? #7;TEXT$:REM 2003 DATA
140 ? #7;E$;"&d@";:REM UNDERLINE OFF
200 V=24:S=1:B=3:FONT=32:VMI=12:GOSUB 1000:REM 32=BRUSH
210 READ TEXT$:? #7;SPC$(26);TEXT$:REM 2004 DATA
300 V=12:S=1:B=3:FONT=52:VMI=8:GOSUB 1000:REM 52=UNIVERS/ITALICS ON(S=1)
310 READ TEXT$:? #7;SPC$(3);TEXT$:REM 2005 DATA
400 S=0:B=0:FONT=4101:GOSUB 1000:REM TIMES AGAIN!/ITALICS OFF(S=0)
410 ? #7:FOR X=1 TO 2
420 READ TEXT$:? #7;SPC$(8);TEXT$:REM 2006-7 DATA
430 NEXT X
500 P=0:H=12:V=10:S=0:FONT=8:VMI=8.3:GOSUB 1000:REM 8=PRESTIGE/P=0(FIXED SPACE)
510 ? #7;E$;"&a8L";:REM LEFT MARGIN=8
520 ? #7:LIST "P:":REM LIST PROGRAM
530 OPEN #7,8,0,"P:":REM "LIST P:" CLOSED #7!
600 P=1:V=10:S=0:B=3:FONT=52:VMI=6.8:GOSUB 1000: ? #7
610 ? #7;D$;D$
620 ? #7;"Atari",,,,,,,,,,21,,,,,,,,,"Classics"
700 ? #7;E$;"&l0H":REM EJECT PAGE
710 END
1000 REM UPDATE AND SEND FONT CODES
1010 H$=STR$(H):V$=STR$(V):FONT$=STR$(FONT):VMI$=STR$(VMI)
1020 ? #7;E$;"(OU";E$;"(s";P;"p";H$;"h";V$;"v";S;"s";B;"b";FONT$;"T";
1030 ? #7;E$;"(16Q";CHR$(255);E$;"(OU";E$;"&l";VMI$;"C";:RETURN
2000 DATA A
2001 DATA TARI
2002 DATA C
2003 DATA LASSICS presents
2004 DATA Using the Hewlett-Packard DeskJet 500 Printer
2005 DATA ...to do some FIRST CLASS printing with your 8-bit Computer!
2006 DATA This page presents a sample of printing in various fonts and demonstrates
2007 DATA how a fairly simple BASIC program can do some pretty nifty things!
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ATARIWRITER-80 AUXILIARY MENU

JEFF McWILLIAMS, AC CONTRIBUTING AUTHOR

Kudos For 80 Columns!

Having an 80 column display is really amazing. If you're doing all your 8-bit computing in 40 columns, it's hard to imagine what you'll gain by upgrading to 80 columns. Once you've made the switch to a really good 80 column setup you'll never turn back.

I've used simulated 80 column displays on the Classic Atari before. You know, where the computer goes into GRAPHICS 8 mode and uses teeny weeny letters to cram 80 of them horizontally onto the screen. Programs like Omnicom, Kermit-65, VT-10SQ, and Omniwriter use this. This type of software-generated 80 column display turned me off.

Whereas simulated 80 columns is stuck with the 8-bit graphics resolution of 320x200, the XEP80 actually uses a 640x200 display. This results in well-defined, crisp text that's immediately recognizable and easy on the eyes. The XEP80 video signal is rock solid as well. There's no noise, blurs, smears, or fuzzies in the display, things you *will* experience on an unmodified XL. All this makes the XEP80 box from Atari orders of magnitude better than simulated 80 columns from your standard 40 column video output.

As you can see, I'm definitely hooked. In the December '92 issue of *ACI* presented a little program that allowed you to view and print GRAPHICS 7+ or 8 pictures with your XEP80. It's time once again to present a program that will further improve XEP80 computing.

80-Column Wordprocessing

AtariWriter 80 (ATW80) is one of only two wordprocessors designed to work with the XEP80 80-column display box. The other is Turboword+ from Micromiser Software. Of the two, only ATW80 supports expanded RAM, utilizing two of the 130XE banks- thereby allowing up to 45K of space for your document.

Unfortunately ATW80 is pretty DOS-unfriendly. Once you've loaded the program, there's no convenient way to exit back to DOS without rebooting your computer. The menu only lets you view directories on drives 1 and 2, and you can't view the contents of subdirectories when using SpartaDOS or MyDOS.

I found that I really loathed these inconveniences, and kept using Turboword+ for most of my wordprocessing needs. It was more DOS friendly, despite being more disk intensive than ATW80 and having only 20K of space to write my regular "Moonlight Workshop" column articles in. Well, life is never simple; something was bound to cross my path and make me think about ATW80 again. That "thing" was the 8-Bit Alchemist.

The good ole Alchemist is hooked on the XEP80 like me, but his word processing needs are different than mine. When he mutates into the *Atari Classics* Editor, having as big a text buffer as possible is a must. Every little thing that makes his job of editing this magazine faster and less painful is a necessity. For him, it was AtariWriter 80 or bust. He made it clear to me, in many ways, subtle and otherwise, that there just *had* to be a way to patch ATW80 to fix the problems mentioned above. After all, Craig Gaumer of LVAUG created a brilliant patch to AtariWriter Plus that did all of the above and more. If it was possible to patch AW+, who not ATW80?

Hardware Or Software?

I'm studying to be an Electrical Engineer, remember? It's easy for me as a "hardware person" to tilt my nose slightly in the upward direction, mumble "It's a SOFTWARE problem", and move on to more interesting things. Then came along Joe Sabatino, an Internet user who posted an interesting ATW80 modification done by George King.

George modified ATW80 to load something other than the Mail Merge module when you press "M" from the main menu. This could be DUP.SYS from AtariDOS or MyDOS, X32D.DOS from SpartaDOS, or XON2.COM from SpartaDOS-X. Well, for AtariDOS, this works fine. DUP.SYS loads and you can get disk directories and stuff, and then reload ATW80. For SpartaDOS, loading X32D.DOS or XON2.COM has the same effect as doing a coldstart. Doing a coldstart to exit ATW80 can be real annoying, especially if you're using a floppy based system. You have to wait for everything to reload, reinstall your RAM-DISK handlers, and reinstall TSR programs like SUPERKEY, PROKEY or VPATH. What a pain!

George King's hack was okay, but it left room for improvement. The key element for me, however, was that George proved ATW80 could be modified to run something other than the Mail Merge module. It was a logical next step to suggest a new menu program be loaded instead of Mail Merge. Once you have a separate program loaded, you could do whatever you wanted: exit to DOS, view any disk drive, and any sub-directory, or anything else your heart desires. That's how the AtariWriter 80 Auxiliary Menu was born. This is a little program that does exactly what I described above.

Getting Started

Keep an eye peeled for a program called "AM.COM" on the October '93 *AC* Software Disk: this is the Auxiliary Menu. (Eager beaver-types can download it from commercial networks or your local BBS: look for AMCOM.ARC.) It actually has a dual purpose. It not only offers Directory and Exit To DOS features, it patches ATW80 without need for Disk Editors, Sector Editors, or a separate module to keep track of. Before you make any modifications to AtariWriter 80, make sure you are using a backup copy. Do NOT use your original AtariWriter 80 disk! There is no menu option for reversing the effects of the Auxiliary Menu modification.

Once you've made a backup copy of the Atariwriter 80 disk, use the DOS of your choice to copy AM.COM onto that disk. While still in DOS, activate the 80 column handler for the XEP80. For SpartaDOS-X users, type "CAR:XEP80.SYS". SpartaDOS 3.2d and MyDOS users can load the XEP80 screen handler from the XEP80 utility disk. Once you've got an 80 column display, insert your backup ATW80 disk into Drive 1. (Hard drive and RAMDISK users can use whatever means available through DOS or hardware to make the ATW80 files and AM.COM available in the root directory of D1:.)

Next, load AM.COM. You should see the main screen of the Auxiliary Menu, presenting several options. One of those should be "C" for "Change AP.OBJ". Press "C" to make that selection. The Auxiliary Menu will print some explanatory information and then prompt you to continue. You can abort the procedure by pressing "N". If you give the okay, Auxiliary Menu will attempt to read, modify, and then rewrite the file "D1:AP.OBJ". Auxiliary Menu will print progress messages as

it goes along. If any errors occur, the error will be printed to the screen, and the procedure will be aborted.

A New AtariWriter-80

If all went well, you should now have a working modified copy of ATW80. You can now reboot with your ATW80 disk in Drive 1. SpartaDOS 3.2d users do not load the standard XEP80 handler before loading ATW80. Rename the AUTORUN.SYS file on the ATW80 disk to AT.COM and load that from the D1: prompt. SpartaDOS-X users can load ATW80 with or without the XEP80.SYS handler loaded with "X AT [RETURN]". Regardless of what DOS you use, the ATW80 main menu should appear. In place of the familiar "Mail Merge" selection you'll see "Move to Aux. Menu". That's how you'll enter the Auxiliary Menu.

Entering Auxiliary Menu from ATW80 will look exactly the same as loading AM.COM from DOS. Options "A" and "M" will only work successfully for MyDOS or SpartaDOS.

These options use the XIO 40 command, to load and run other binary files. This command doesn't seem to be supported by DOS 2.5 or other similar DOS's. ATW80 loads other modules regardless of which DOS is in use, so there must be a way. I'm looking into disassembling the AUTORUN.SYS file to see if it'll yield clues suggesting how to do this. As Auxiliary Menu gets further modified, you'll see revision updates appear on the ACSoftware Disk FIRST.

Option A doesn't seem to work properly with SpartaDOS-X. Instead, choose Exit to DOS, and reload ATW80 from the command prompt using the "X AT.COM" command as before. SpartaDOS and MyDOS users can use the "A" command to return to AW80 and still have your edit buffer intact. Neat!

Mail Merge

Using the M command to run the Mail Merge module results in various levels of success. In most cases, Mail Merge runs, but the Return to ATW80 option results in a system lock-up or reboot. As previously noted, ATW80 appears to have a strange way of moving from one module to another.

Disk Directories

Drives 1 through 9 can be opened for a directory listing by simply typing number of the drive. This will result in a prompt requesting a "PATH>MASK". Simply hitting return will result in all files on that drive being displayed. Auxiliary Menu will recognize any directory path using the ">", "\", or ":" characters. If nothing follows these characters, "*" is assumed as the search mask. Auxiliary Menu will properly display the MyDOS directory listings that have 4-digit sector counts instead of only 3. If any errors occur while Auxiliary Menu is reading a directory, the error message will be printed, and you'll be returned to the main menu.

Note that if your subdirectory name has an extender, the extender won't be displayed in a listing of directory names under the main directory (ATW80 uses the extender area to tack on the identifier DIR in inverse characters). If you haven't recorded the subdirectory's extender somewhere, you'll get ERROR 150 if you try to open the subdirectory without typing its full name including the extender- which is "hidden" in both the Auxiliary Menu and ATW80. That's one of several oddities I'll be looking into for possible future improvements.

Exiting to DOS

Exiting to DOS basically does a RESET. Since ATW80 isn't running, the RESET vector is no longer trapped, so the computer properly returns you to DOS. Remember, if you loaded ATW80 from a 40 column screen, exiting to DOS will

return to 40 columns. It's easy to get confused and continue to stare at the 80 column screen after selecting Exit to DOS, thinking nothing really happened. The SRAM buffer in the XEP80 will continue to hold and display the last screen of data even after the system has silently returned you to your 40 column DOS. If you're using the same monitor for both 40- and 80-column displays and employing a switch (such as The Alchemist's "80-Column Switcher"), you'll see your 40 column DOS already waiting for you when you switch back to 40 columns.

Auxiliary Menu is still a bit rough around the edges, basically due to weirdness in the way ATW80 goes from one module to the other. Like the Alchemist's Super Video upgrade, further probing and prying needs to be done before Auxiliary Menu is truly complete.

In hardware alchemy you use oscilloscopes and voltmeters. In software alchemy you use disassemblers and machine language monitors/debuggers. Either way, there's magic to be done, and it always seems to happen by the light of a full moon.

[Editor's Note: wild rumors notwithstanding, it is patently untrue that The 8-Bit Alchemist threatened Mr. McWilliams with destruction by remote-controlled thermonuclear devices if this ATW80 patch wasn't written. I have it on good authority The Alchemist is rather a peaceable fellow and would never employ weapons more violent than, say, conventional chemical explosives. Rumors to the effect The Alchemist has been tinkering once again with video upgrades appear to be true, and the Editors are looking forward to an "all-video" issue of AC later this year. -BP]

OOPS! We Goofed!

In the April '93 AC, we accidentally inverted two digits in the Zip Code of the advertisement for ZTM Software Manufacturers. Apparently this resulted in significant delays and other assorted difficulties encountered by readers who tried to contact the company. The correct address for the company is:

ZTM Software Manufacturers
P.O. Box 240
Forked River, NY 08731 USA
Phone: 609-971-5807

We apologize for the error and regret any inconveniences.

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FURY: THE WRATH OF TALJUN CATHU

by Jeff POTTER, AC Graphics & Entertainment Editor

In The Beginning

"Just when you thought it was safe to put away your trusty 8-Bit...AERION SOFTWARE presents FURY The Wrath of Taljun Cathu." So begins the instructions for this new (yes, new software for the Atari Classic computer!) action/adventure game.

FURY is similar to the popular Shamus game released by Synapse, and the JV Software series (Action Quest, Ghost Encounters, and Journey to the Planets) released long ago. You are an explorer who travels from screen to screen within several "worlds", armed with a gun of sorts, searching for treasure and other objects. Your quest is to conquer all five "worlds" (levels) by locating the key that opens the door to the next world. Of course if it were as easy as that, the game would be a cakewalk. Most every room has a collection of stationary and mobile monsters which shoot back at you. And at the end is the evil Taljun Cathu, who holds your princess hostage...

Health and Wealth

As a refreshing change, a shot does not kill you, but reduces your "Health" rating. This also works the other way: most monsters are not killed by a single shot, and some require quite a few well-aimed hits. Keeping track of your health becomes your main concern throughout the game. You can occasionally find Healing Salve within treasure chests, and can find an occasional stash of food, but obtaining these takes planning and a little bit of luck.

Money, or "Wealth" is another factor you must simultaneously monitor. You can find gold just lying around, but occasionally upon opening a treasure chest you find a "Midget Thief" inside that steals some of your hard-earned wealth. You'll need this gold to buy improved weapons and other items to better your chance against your enemies. These can be bought at the shops that show up (one or more to each level).

Programming Notes

When I first read the instructions and learned this game required BASIC to run, I thought "Oh no, here's another slow-speed BASIC arcade game." But I was very impressed; the programmer apparently uses an extensive set of USR function calls to speed up execution. All player motion is very smooth and fast-moving (when necessary). Also, an impressive number of enemies and shots can appear on the screen, with no tell-tale signs of the program slowing down.

The background, and some of the enemies, appear to be in four-color character graphics. Your alter ego, and the moving enemies, are created with player/missile graphics, and are always animated appropriately. Apparently great attention was paid to detail on the artwork, which is all of good quality.

The programmer uses color and sound to aid game play. For instance, your little man will turn a lighter color to indicate his "shield of protection" is still active (it doesn't last forever). The sound effects are good, and the music score is adequate (it can be disabled easily, after you have heard it repeated often enough).

The state of each room is saved with sufficient detail to allow you to pop into a room, get one shot off, and run out. If you injure or destroy an enemy, he will be dead (or closer to dead) when you return to the same room. Some games (notably Shamus) always reset the state of each room upon entry.

This meant you'd better clear out that room in one try (which I never cared for).

On first playing FURY, it seems impossible to get very far at all. But practice and attention to detail will teach you the ways to enter rooms and systematically destroy your enemies and scoop up the booty. The game becomes an engrossing strategic encounter, where you're thinking "okay, I need a little more gold to afford the 'protect' shield, then burst into the next room, kill off everything quickly, and scarf up the food there to increase my health rating." So it's not just another "blast everything in sight" game. Also, with additional practice you can get along without buying the enhanced weapons and rely mostly on your skill and wits.

Nits

FURY loads and runs correctly on a stock 800 with the BASIC cartridge, and on a stock XL with built-in BASIC. I found it refused to load on my 800XL with the US+ Operating System (which is no big deal, since I can switch the stock XL OS back in).

On two occasions I bought the "protect" shield and ran into a tree. I found myself stuck to the tree with no way out. The enemies were shooting off at angles that would never hit me, and I tried every combination of joystick motions without success. I finally had to reboot the system, as it seemed I would never get killed, and never get out of that tree.

The game doesn't seem to have a "Save Game" feature, so you always start over in the first room of the first level. There also isn't a "Pause" feature, but I found it's okay to remain indefinitely in a room after you've cleared out all the enemies. I haven't found any "Easter Eggs", or quick ways to skip levels. That doesn't mean there aren't any, however, because the notes say there are things left for you to discover.

One nit I have to pick concerns the game's documentation. It's a little sparse, and could have been a little more "polished." Case in point: included is a letter of sorts from Taljun Cathu, declaring "all attempts are futile and will result in a most painful death!" This was obviously only a handwritten note, but would have taken on a more ominous tone had it been typeset with an Old English or Germanic font, maybe even done with Daisy Dot.

In Conclusion

As a whole, I enjoyed FURY and would recommend it to all arcade game fans. It gives you a sense that practice and planning are rewarded with higher scores, a characteristic essential to a good arcade game. You'll find enough challenge here to come back for more. Its low price (\$19.95 + \$3.50 shipping and handling) makes it all the more appealing.

Please heed the programmer's notes and refuse pirate copies of this game if it shows up on your local BBS or telecom network. We Classic Atari users owe it to the remaining programmers who invest their time and money in our market not to pirate their work. FURY is a good value for game lovers. Buy it!

Available from:
Aerion Software
P.O. Box 1222
Riverdale Station
New York, NY 10471-1222 USA
Price: \$19.95 + \$3.50 shpg.



Moonlight Workshop

THE XL/XE Guide TO EXPANDED MEMORY, PART 3

Jeff McWilliams, AC Staff Columnist

OS RAMdisk Handlers

There are several different ways of setting up a RAMdisk on your computer, depending on what you have for hardware and software. Several OS replacements have built-in RAMdisk handlers. Many of the most popular DOS's have their own RAMdisk handler programs included with them. Those that don't can usually gain access to a RAMdisk through a public domain RAMdisk program. There are over half a dozen RAMdisk programs for DOS 2.5 alone. To talk about each and every RAMdisk program for every different DOS would be a waste of time since most DOS RAMdisks work the same. I'll only discuss the most popular or unique DOS's and RAMdisk handlers.

Pay special attention to what's contained in brackets after the product or program name. That is where you'll find which category the program falls into, be it XE, PLUS, or XE+. (You'll have to refer to the chart in my Column in the June '93 issue.) If more than one category is listed, it means the program has several modes of operation. In the description of the program you'll find details on how to configure the program for each mode if that information was available at the time this article was written.

To my knowledge, two Operating System replacements offer RAMdisk handlers as part of their built-in features. These are the UltraSpeed+ OS from Computer Software Services, and the Omniview 256 from Newell Industries. I'll start with those first.

Omniview 256 [PLUS / XE+]

The Omniview 256 was designed for either a stock 130XE or the Newell 256K XL upgrade for the 800XL and 1200XL computers. The RAMdisk handlers support a maximum memory size of 256K. Anything above that is ignored by the Omniview 256.

Enabling the RAMdisk is done by first pressing the drive number you want your RAMdisk to respond to. You then press and hold the START key while hitting RESET. You can also enable the RAMdisk by running one of several programs on the Omniview 256 disk called INSTALLx, where x is the number you want the RAMdisk to respond to. Either way, you then have to format the RAMdisk using the DOS of your choice. If you're using a stock 130XE, format the RAMdisk as a single sided, single density drive. It should format leaving 512 free sectors. The RAMdisk will consume all of your 130XE's expanded RAM.

If you're using a Newell 256K 800XL or 1200XL, you

can format the RAMdisk in one of two ways. You may format it as a single sided, single density RAMdisk. This will give you a standard 720 sector RAMdisk identical to a floppy of the same configuration. In this mode the Omniview RAMdisk behaves as a PLUS program, leaving the XE banks free for use by other software. Alternatively, you may format the RAMdisk as a double sided, single density drive, yielding up to 1440 free sectors. MyDOS and SpartaDOS are the only DOS systems I'm aware of that support this configuration. In this mode the Omniview RAMdisk behaves as an XE+ program, using all the expanded RAM in a 256K computer. The Omniview 256 RAMdisk works fine with DOS 2.5, DOS 2.0s, MyDOS 4.5, and SpartaDOS 3.2z. I haven't tested it with other DOS's.

Lightning Spellchecker

This RAMdisk works well not only with DOS systems, but also with boot programs. I had specific experience using the Omniview 256 with LJK's Letter Perfect wordprocessor. LJK has a spelling checker that occupies an entire 90K disk. With the Omniview 256, I could boot up an ordinary sector copier, enable the RAMdisk as drive 2, and sector copy the Letter Perfect dictionary disk to the RAMdisk. I could then do a coldstart, booting Letter Perfect. Once Letter Perfect was loaded, I re-enabled the RAMdisk and configured Letter Perfect to let it know I had a 2nd floppy drive where the spelling checker was located. The second floppy drive was actually the Omniview 256 handler activated as D2:. From that point on spell checking any document I wrote or loaded from disk was done at lightning speed. This is a good example of how to use a RAMdisk with software that wasn't originally designed with expanded memory in mind.

Although the Omniview 256 RAMdisk handler was designed exclusively for a 130XE or Newell 256K upgrade, it may also work well with other upgrades. I wouldn't expect it to work properly with a RAMBO or similar 256K upgrade because those use a different set of banking parameters written to Port B than the Newell upgrade does. 320K and above memory upgrades may work with the Omniview 256. The Newell 1088K works fine with the RAMdisk handlers in the Omniview 256 if you're willing to tolerate the fact that 832K will be unused by the RAMdisk.

UltraSpeed+ OS [PLUS / XE+]

The US+ RAMdisk handlers were designed for any

130XE compatible memory upgrade, from 128K to 2 megabytes. Activating the RAMdisk is done via the US+ menu, which you access by holding down the START key while pressing RESET. From the menu you set the drive number of the RAMdisk. As with the Omniview 256, you then have to format the RAMdisk using the DOS of your choice.

You can also install a toggle switch that when in the "ON" position will automatically make the RAMdisk appear as drive 1. This feature has a number of unique uses. One would be when playing an Infocom game which uses two sides of a floppy disk. Sector copy side two of the game into the RAMdisk, and then boot side one. Side one of an Infocom game is only accessed once when you boot the game. After side one is through loading, throw the toggle switch to the "ON" position, enabling the RAMdisk as D1:, containing side two of the Infocom game. By doing this, you eliminate all the time it takes for the game to constantly load new information as the game progresses. Who knows, it could breathe new life into a host of classic interactive fiction games for the 8-bit, especially since most are now available for around \$10 from B&C ComputerVisions.

If you're using a computer with 256K or more of memory, then formatting the RAMdisk as a single sided single density disk will make it act like a PLUS program. The RAMdisk handler won't touch the 130XE banks of expanded RAM so that other programs categorized as "XE" programs will work in harmony with the US+ RAMdisk. Formatting the RAMdisk to single sided double density results in the use of *all* the RAM in a 256K computer. The RAMdisk would then be acting like an XE+ program.

If you use those same format parameters on a RAMdisk for a machine with 320K or greater, the RAMdisk will again be in PLUS mode, freeing the 130XE banks. In fact, by knowing the amount of expanded RAM available in your machine, you can configure MyDOS to format that RAMdisk as a floppy using all but 64K. The US+ RAMdisk routines automatically save the 130XE banks for last. Leaving at least 64K of expanded RAM free on a memory upgrade of any size will result in the RAMdisk handlers continuing to operate in PLUS mode. The US+ RAMdisk handlers have been tested and verified to work with DOS 2.0s, DOS 2.5, MyDOS, and SpartaDOS 3.2z.

More Goodies In US+

The US+ has three additional features not found in the Omniview 256. First, you can set the RAMdisk to D1: and then boot from it. This would be great for boot games that use only one side of a disk, rebooting DOS, or any other bootable utility or application as long as that program doesn't have expanded memory conflicts with the RAMdisk handler.

Second, the US+ has its own mini sector copier you can call from the configuration menu. It was designed for tasks like the Infocom game where you would sector copy one side of a disk into the RAMdisk, and then use it later on. It can also copy disk to disk, or RAMdisk to disk. The sector copier only copies up to 720 sectors of

a disk, so you won't be able to make instant copies of XF551 360K or 3.5" 720K disks with it.

Third, the US+ has a memory checking feature that will check ALL the memory in your upgraded computer. Standard RAM, OS RAM, and expanded RAM are all thoroughly checked for errors or problems. If a memory failure is due to a faulty DRAM chip, the error reporting routines and the instructions in the manual can help you locate that bad chip. Our Managing Editor recently discovered how valuable this is as a troubleshooting tool while installing the Newell 1088K upgrade into an 800XL. *[The US+ in my 1088K 800XL found- and tested- 1120K, 32K more RAM than the machine actually has! The darn thing is still flaky, and I hope to find time away from AC to hack at it again. Could be the subject of an interesting article once I figure out where I messed up. The Newell 1-meg upgrade is rather nasty for the do-it-yourselfer, definitely not recommended for technophobes. - BLP]*

The Ultraspeed+ OS has features that appeal to everyone, be they casual interactive fiction game players, serious power users, or something in between. The Omniview 256 has less to offer in terms of RAMdisk capability than the US+ does, but also costs less than the US+. Both alternative Operating Systems have more to offer than just RAMdisk handlers, and those interested in either one should contact either Computer Software Services (see their ad in this issue) or Newell Industries (P.O. Box 253, Wylie TX 75098, USA, phone 214-442-6612) for more information.

Whither Art Thou, Synergy?

At one time there was a third OS available that offered RAMdisk features similar to those found in Omniview 256 and US+. It was called the Expander Operating System and was produced by an outfit called Synergy Concepts. The Expander supported up to 512K of RAM, not including the Newell 256K XL upgrade. Like the US+, the Expander allowed you to boot from the RAMdisk as D1: if you wanted. It also had a resident mini-DOS that allowed you to format and copy data into your RAMdisk. The Expander seems to have had the ability to create multiple RAMdrives from expanded RAM, not just one. The Expander was a worthy OS replacement, somewhere between the Omniview 256 and the US+ in both features and cost.

So, what happened to it? According to Brad Koda at Best Electronics, the two owners of Synergy Concepts had a falling out and decided to dissolve the company due to irreconcilable differences. Brad made an unsuccessful attempt to purchase the product from the owners. To this day, I've yet to run into someone who actually owns the Expander and would welcome the opportunity to have a serious look at one. The plight of Synergy Concepts is yet another faded chapter in the still-unfolding saga of the Atari 8-bit community's struggle for existence.

Next time: the AC Guide to Expanded Memory continues with RAMdisk handlers for several DOS's, and then move on to applications. See you soon!

SAGA of the AC DATABASE: PART 2

BEN POEHLAND, CIRCULATION EDITOR

In Part 1 of this article (June '93) I described how the AC subscriber list got started and how disaster was narrowly averted when our original database setup was suddenly discovered to be inadequate. In this issue I'll wrap up the story of the world's most battle-hardened database.

The January Panic

I had originally installed the AC subscription database on a Seagate fixed-media ST-128N 20-meg SCSI hard drive. I had this drive set up in two partitions of 10 megabytes each, with the first partition being my boot drive and the second one containing all the TurboFile program modules and the magazine's database files. After the October Crisis things settled down a bit, and I grew comfortable using TurboFile and the hard drive.

Around the middle of January 1993 I went to print up the mailing labels for the February AC, and something nasty happened. As the Seagate was booting up in SpartaDOS 3.2d, a demon bit my computer. It only executed part of my STARTUP batch file, then dumped me into the Sparta command processor (it should have loaded the Sparta menu). Well, OK, maybe it was just a glitch. I powered down, then re-booted. Uh-oh, it happened again. It was October '92 all over again as that sick feeling of terror seized me. I fought the urge to panic and tried to think logically.

I reasoned the drive must have somehow lost track of the location of the two command files my batch file was supposed to execute as part of the bootup sequence. The easiest way to scope things out was to load them by hand. I typed MENU and got an error: not a good sign. I *knew* the file MENU.COM was on the drive; it had booted properly dozens of times before. So I typed DIR to have a look at the directory from the Sparta command processor. I was totally unprepared for what happened next.

Instead of the usual filename/extension/file size/time/date format, all I got was row upon row of the numeral "1". That did it. The last vestiges of reason went out the window as I succumbed to full-blown panic. My hard drive was a goner. And with it, the AC subscriber list. You see, this was in the days before I got Religion: I felt so invincible with my hard drive I hadn't made backups of the database for a couple months. Some 350 paid subscribers had just gone up in smoke, and sifting through the rubble of the wrecked database to reconstruct the missing people would be several months' work. And just as the February issue was due for mailing! For quite some time I stared in stupefied astonishment at the rows of 1's on my screen. I finally decided this was some bad dream, turned off the machine and went to bed.

Another Close Call

Next day I called AC's Technical Consultant, Bob Puff. I had hardly spoken a whole sentence about the bootup problem when he breaks in, real cheerful-like, "Did you get a directory full of 1's?" I got excited. "Yeah, yeah! Is my drive damaged?" "Naaaah", says Bob, "your drive is fine".

Whew! Big relief! Now we're getting somewhere. I casually mention the magazine's precious database is also on the ailing drive, can I save it? "Oh, no" says Bob in a nonchalant, almost cavalier tone, "You'll have to low-level format the whole drive and rebuild your partitions and stuff, so you'll lose all the data you had on it." My heart sank; that was *not* what I wanted to hear!

Then Bob launched into a tekkie discourse about how SpartaDOS can mess up your FAT and other vaporous weirditudes reported by people who use Sparta with Seagate embedded SCSI drives. The longer he talked, however, the more I became convinced the problem was confined to the first partition, and that the second partition containing the AC subscriber list was probably unscathed.

I was right. I used the BB menu to boot from a floppy instead of the damaged hard drive partition, and from there I was able to get into the TurboFile data on the hard drive's second partition. (I always leave lots of empty sectors between my partitions as a buffer; maybe this helped.) You can bet I rescued those files as fast as my sweaty palms could type! I then reformatted the damaged partition with SpartaDOS and dumped all my boot files back onto it. The magazine's precious database files had never been in any real danger, but I didn't know that.

The entire exercise was a religious experience, leading to my present Monday night rituals. This Religion consists of a single Commandment: Thou Shalt Back Up!

Good-Bye Seagate, Hello SyQuest!

The January Panic really unnerved me, for it had demonstrated just how vulnerable the database files really were. I had a second Seagate ST-128N lying around and decided it was time to press it into service as a backup. This turned out to be extremely inconvenient, as I had to physically exchange drives due to lack of space, the whole thing got to be a real pain. I needed a better way.

I saw some guys at work walking around with these SyQuest cartridges, and it immediately piqued my curiosity. I started pestering them with questions. Were these drives SCSI? (Yup.) Were they fast? ("Faster than a speeding Seagate!") How much memory capacity? (Your choice: 44 or 88 megabytes.) Was the cartridge thing reliable? ("Haven't had one fail on me yet.") I started getting that trembly feeling like I get when I'm on the verge of some great discovery. Since I still had a lot of doubt- especially as to compatibility with the Black Box- I decided to purchase one locally. That way, if the thing didn't work, at least I'd be able to return it with a minimum of hassle. The only local store that sold them was CompUSA, and I almost went into hyperventilation when I saw the price (the prices have since fallen quite a bit, though as hard drives go the SyQuest is still expensive). But I paid for it with a credit card, so it wasn't real money anyway (at least, not until the end of the month!).

You Get What You Pay For

Smartest move I ever made. In five months of hard use

the SyQuest has proven completely reliable. Its SCSI implementation appears very robust, and it lives happily in digital harmony with the Black Box. I pooled resources with friends at work, and between us we placed a bulk order (at an extra discount) for 44-meg cartridges at \$62 each including shipping. Sure, the drive mech is expensive, but then each cartridge is the equivalent of a whole new drive, and a cartridge is a lot cheaper than a fixed-media drive. You could fill a bookshelf with them, and in the space of six linear inches you could probably store every single piece of software ever written for the Atari 8-bit (!). But that's just razzle-dazzle.

Removable media was the perfect solution to my immediate problem. I now always have at least one hard backup to the magazine database. Making the backup copy is a snap. Storing it is easy (it goes on the bookshelf astride my computer desk). If a cartridge fails, or the computer demons launch another attack, my defenses are prepared: I just whip out my spare cart and I'm ready for business again.

What if the SyQuest mechanism itself fails? No problem. When a fixed-media drive fails and you send it away for repair, all your data is wiped out when they return it to you. But with a removable media drive, you keep your data and just send off the mechanism to be fixed. I didn't like even that idea much, so after hunting in the pages of *Computer Shopper* I purchased a spare mechanism by mail, much cheaper than the first one. Today, if there's a failure of either media or mechanism, it won't impair the operation of this magazine at all. AC's most precious resource is now about as bullet-proof as can be. Not only because of the SyQuest hardware, but also because of my newfound Religion. The only way we'll ever lose this irreplaceable asset is if some idiot targets the village of Frazer as Ground Zero for World War III.

Labels: The End Product

I began this tale of the AC database with a suggestion for you to have a glance at your mailing label. That little label makes all the difference in the world when it comes to the delivery of your magazine and your software disk. Without it, nothing moves. Nobody gets to read about the Classic Atari computers. And every single label is generated by me.

A label print run begins with firing up the database and doing several sort runs. The output of a TurboFile sort run is stored in a pointer file which is suspiciously small. That's because the sort file doesn't actually store the data to be printed, but only vector data that another program module uses to retrieve data from the main database in sorted order. For the June '93 issue I did three sort runs: one run to compile a list of airmail labels, another for North American deliveries with American addresses sorted in ascending Zip Code order, and a third sort that compiled labels for all the subscribers to AC's Software Disk. The vector data files are stored on disk. Then I go into TurboFile's print routine, follow the prompts, and start dumping data to my ancient Atari 1025 printer which has been loaded up with labels.

Prehistoric Relic

Wait a minute. A 1025? Anyone who ever had one knows the 1025 is a truly primitive printer. We're talking 7-pin dot-matrix here, no logic-seeking, no true descenders,

text only (no graphics capability). It's slower than a tortoise and noisy enough to wake the dead. And I'm using this prehistoric relic alongside all this other hi-tech hardware? I must be crazy, right?

Crazy like a fox. When it comes to the printing of labels, I don't care a whit for speed, graphics, or true descenders. What I *do* look for is a printer with a tough, reliable mechanism. Running lots of labels can wreck a printer. But the mechanism in the 1025 is indestructible. I can commit the most hideous atrocities against it, it doesn't care. A typical atrocity is manually adjusting the platen while the printer is running, in order to align the labels. (Try that on an Epson, you'll blow the Epson's platen motor drive transistors- not nice!) As to graphics, I've seen other people print fancy mailing labels with little pictures on them. Where are all those labels now? In the trash! Fooey. Descenders? You don't need them when your label is printed in all caps (as AC's labels are).

What about speed? I printed about 900 labels total for the June magazine and disk. The print runs took several hours each, and I could care less. Once the printer is aligned and the labels are properly centered, I know from experience that no slippage or hangups occur in that rock-solid 1025/Okidata mechanism. While the 1025 is slowly grinding out labels, I'm doing stuff. Hey, summer's here, I got grass to cut. Change the oil and filters in the car. Take my shirts to the laundry, do a little shopping, back to the laundry to flirt with the girl at the counter. Get the picture? You can bet your grandmother's teeth I'm not standing around watching the printer crank labels.

Blank Label Blues

Blank label stock is becoming a problem. The 1025 has a fixed platen width, requiring a carrier 9-1/2" wide. That size is getting really hard to find. Further, the labels must be two-across with the carrier perforated down the middle. At the moment the only place that sells such labels is Radio Shack- at a ripoff price, of course. Even worse, as soon as Radio Shack discovers that Ben Poehland is desperately dependent upon some product they're selling, they discontinue it. Happens to me every time. I have this love/hate relationship with Radio Shack, much like I had with Atari Corporation before I lost interest in the Sunnyvale Follies.

Unicorn Publications recently tried to help out with a shipment of 10,000 labels they got at a great discount from Viking Office Supplies. But when I attempted to use them to print labels for the April issue, I found the carrier was 1/4-inch too short for the 1025. I hadn't measured the platen width properly; having to return them was a real bummer, and Viking didn't sell the 9-1/2" size. I tucked my tail between my legs and returned to the Rip-off Shack for more labels, snarling all the way.

The perforation down the middle is real important. There are 22 labels per carrier page, two columns of 11 labels each. I calculate roughly how many pages of labels I'll need, tear off that many pages, and stuff the lead page into the 1025. TurboFile only prints one record (label) at a time, so the first run through prints half the labels all in one column on the left side of the continuous carrier. The printer runs out, and the program stalls halfway through. Having completed my shopping and flirting, I turn the whole mess around, installing the label carrier from the opposite end. I restart the TurboFile print routine, and it prints out the other half of the batch on the opposite side of

the continuous carrier. I tear it in half down the middle via the perforations, and voila! I have two immense strings of single-column labels all ready to go.

Final Delivery

As with the processing of new subscriptions, all this industry would be for naught if the labels don't get delivered. I place the magazine labels- in two batches separated with rubber bands- into a 2nd Day Air pouch addressed to Unicorn Publications. Our Publisher passes them directly to the printmailer who uses them for the mass mailing of your magazine. The disk mailing labels go in a similar pouch addressed to Alex Pignato, our Disk Distribution Manager. These pouches are placed along with all the rest of the outgoing magazine mail to be delivered to the post office on my way to work the next morning. Which is to say, they get delivered to the post office in my shopping bags. You know, the kind with rope handles, like bag ladies have...

Postscript: Whither TurboFile?

Sadly, MicroMiser Software abandoned the Classic Atari market around the same time Atari Corp. and ICD did (January '92). And with it went some of the most powerful business software ever written for our machines. Not only are MicroMiser's products no longer available, they refuse to support the products they've already sold. Just one more tragic episode in the larger panorama of a declining market.

For AC, it's worse than that. Because despite its overall excellence TurboFile has an Achilles Heel: a truly evil little bug that causes it to overwrite its own data files under certain conditions. I discovered this the hard way when several paid subscribers vanished into the aether in December 1992 (I've since restored the missing subscribers). Being now aware of the conditions that trigger the bug, I avoid it by personal vigilance. But the potential for human error is still very real, and the integrity of the database is at risk.

Naively, I reported the problem to MicroMiser, thinking they'd fix it (I did after all shell out \$50 for this thing). Their response ran something like, "Huh, we sold 100 copies of that program and no one ever complained. Anyway, tough toodles, we're not in that business any more." In the background I heard a flapping sound, as of an 8-bitter twisting in the wind. It was *me*.

There is hope. In May of this year I commenced negotiations with MicroMiser for the acquisition of rights to TurboFile. Never having done anything like this before, I'm finding the process far more frustrating and tedious than I ever imagined. As of this writing (early July), things have progressed to a point where I'm now confident of ultimate success by early autumn. Aside from the immediate objective of shoring up the foundations of this magazine, eventually I hope to see TurboFile once more offered in the 8-bit market after the code has been spruced up.



New Faces at AC

A Note from Ben Poehland, Managing Editor

AC is pleased to announce two new additions to the Staff:

John Hardie has joined the AC team as our Resource Editor. If you have a question regarding the availability or existence of a product, send your inquiry to John at his address in the masthead on page 3. Beginners, take heart! John is very concerned about newcomers to the Classic Atari and will soon commence a series of articles especially for the neophyte. A long-time collector, John will be AC's resident expert on Atari 8-bit hardware, software, and vaporware.

Paul Alhart has also signed on to our brave little enterprise as a Columnist. Look for Paul's A-T-A-R-I column in future issues. Those of you who subscribed to AIM before its recent decline may recall Paul as one of that magazine's more formidable 8-bit columnists. A seasoned military electronics technician with a long-time interest in things Fuji, we're looking forward to some interesting projects and tutorials from his seasoned pen.

With these additions the magazine staff is now pretty much up to full strength, and as we become more fully integrated as a team I'm hopeful the quality and variety of AC's content will continue to improve.

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WANTED: To buy, DOS XL 2.35 w/Synchromesh, disk copy OK. Gene Swee, 4543 Delafield Ave., Riverdale NY 10471. Phone: 718-884-9561. FAX: 718-601-5617.

WANTED: XEP80, GC or better; MIO, 256K or 1-meg, state condition; Softside magazines: Aug. 1980 thru Sept. 1981 (also want disks); Compute! magazines 1980-1981, all. Please state price. All inquiries answered. L.P. White, 531 Gasburg Rd., Mooresville, IN 46158. Phone: 317-996-3297. GENie: L.WHITE4.

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SALE: Sea. 2600 carts: CX2601 Combat (5 different games), CX2602 Air/Sea Battle, CX2618 3-D-Tic-Tac-Toe, CX2622 Breakout, CX2639 Othello (bears tag marked "2.6 DOM" whatever that means). 2ea. 5200 carts: one Space Invaders, other unmarked. All carts condition unknown, make offer. Gary Matteson, 806 S. 20th St., Norfolk NE 68701. Phone: 402-379-1977.

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King, 4729 South 4180 West, Kearns, UT 84118. 801-969-5988. GENie: J.KING73. Delphi: kamaro kid.

WANTED: Magazine disks for: ANALOG issues 1-10,22,38,62; ANTIC Vol.1, #1-6, Vol.2, #1,2,3,7,9,10, Vol.4, #2,7; Compute!, all prior to Issue #68 (except #60). Also seeking mags: ANALOG #1,3-6; ANTIC Vol.3#7, Vol.4#10, Vol.5 #7,8,11,12, Vol.6 #1,5. Buy or trade. Bob Scholar, 2535 Tamalpais Ave., El Cerrito CA 94530.

SALE: CSS "Super Pill" for making backup copies of cartridge-based software to floppy disk. Not a pirating device, requires special "Pill" cartridge to run the copied software. \$20 incl. shpg. in continental USA. Ben Poehland, 179 Sproul Road/Rt. 352, Frazer PA 19355. Internet: poehland@smithkline.com.

SALE: Atari STACY computer w/4-meg RAM & 40-meg HD, EC. Incl. original box/manuals, 2-hour battery & charger, one of very few made. S/N 1000084. Shane Rolin, 240A Main St., Imperial PA 15126. Phone: 412-695-8080, press 44 when voicemail answers for more info, leave msg.

CLEVELAND FREE-NET Atari SIG. Modem: 216-368-3888. Internet: TELNET freenet-in-a.cwru.edu (129.22.8.38). Type "go atari" at any menu. 8-Bit computers support area: News, Tips&Tricks, Reviews/Summaries, Programming Forum, recent Info-Atari8 Digests, all Z*Mags. Internet Atari Archive access. Michael Current, 8-Bit Atari SIGop, CFN Atari SIG, P.O. Box 364, Mentor OH 44061-0364. E-mail: xx004@po.cwru.edu.

SALE: 800XL, 65XE, 410 recorder, Touch Tablet, keypad, trakball, paddles, PaperClip, HomePak, Conversational German/Spanish, 15 game carts, EC, \$75 incl. shpg. Gail Westendorf, 2161 Summit Court, Decatur IL 62536-3049. Phone: 217-429-0903. **WANTED:** Innovative Concepts 24-pin printer driver for Print Shop.

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